



Food and Agriculture  
Organization of the  
United Nations



# REPORT

## OF THE REGIONAL SYMPOSIUM ON AGROECOLOGY FOR SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS

*for Europe and Central Asia*

Budapest, Hungary, 23–25 November 2016



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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
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## ABBREVIATIONS AND ACRONYMS

<b>ACC</b>	Association of Conscious Consumers
<b>ASP</b>	Animal Production Systems
<b>CAP</b>	Common Agricultural Policy
<b>CFS</b>	Committee on World Food Security
<b>COAG</b>	Committee on Agriculture
<b>COP</b>	Conference of the Parties
<b>CPD</b>	Centre for Plant Diversity
<b>CPF</b>	Community Preference Function
<b>CSA</b>	Community Supported Agriculture
<b>CSO</b>	Civil Society Organization
<b>DKM</b>	Nature Conservation Centre, Turkey
<b>EALTN</b>	European Agroecology Learning and Training Network
<b>ECVC</b>	European Coordination Via Campesina
<b>EGTOP</b>	Expert Group for Technical Advice on Organic Production
<b>EHNE</b>	Euskal Herriko Nekazarien Elkartasuna (Basque Farmers Union)
<b>EIP-Agri</b>	European Innovation Partnership
<b>ESD</b>	Education for Sustainable Development
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FFS</b>	Farmer Field Schools
<b>GAP</b>	Global Action Programme
<b>GEEI</b>	Groups of Economic and Environmental Interest
<b>GHG</b>	Greenhouse gas
<b>ICAAM</b>	Instituto de Ciências Agrárias e Ambientais Mediterrânica
<b>ICARDA</b>	International Center for Agricultural Research in the Dry Areas
<b>ICT</b>	Information and communication technology
<b>IDDRI</b>	l'Institut du développement durable et des relations internationales
<b>IFOAM</b>	International Federation of Organic Agriculture Movements
<b>INRA</b>	Institut National de la Recherche Agronomique
<b>IPC</b>	International Planning Committee
<b>ISARA</b>	Institut supérieur d'agriculture et d'agroalimentaire Rhône Alpes
<b>ITPGRFA</b>	International Treaty on Plant Genetic Resources for Food and Agriculture
<b>MOOC</b>	Massive Open Online Course
<b>NCC</b>	Nature Conservation Centre
<b>NGO</b>	Non-governmental organization
<b>ÖMKi</b>	Hungarian Research Institute of Organic Agriculture



- PGR** Plant Genetic Resources
- PGS** Participatory Guarantee Systems
- RHEA** Natural Resources Human Environment and Agronomy (Belgium)
- SDGs** Sustainable Development Goals
- TEEB** The Economics of Ecosystems and Biodiversity
- UNFCCC** United Nations Framework Convention on Climate Change
- URGNCI** The International Network of Community Supported Agriculture
- VGGT** Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests
- VGSSF** Voluntary Guidelines for Securing Sustainable Small-scale fisheries
- WFFP** World Forum of Fisher People

# EXECUTIVE SUMMARY

In September 2014, FAO organized the 'International Symposium on agroecology for food security and nutrition' in Rome. This was followed in 2015 by three regional symposia in Latin America, sub-Saharan Africa and Asia and the Pacific. To continue the development of this regional approach, a regional Symposium on Agroecology for Europe and Central Asia was held in Budapest from 23 to 25 November 2016, which was attended by over 180 participants from 41 countries in the Region. The Symposium participants formulated 37 recommendations to develop agroecology for sustainable food and agricultural systems in Europe and Central Asia (see Annex 1 of this report). This summary reflects the discussions among participants on the following five topics:

- » Agroecological concepts, systems and practices,
- » Research, innovation, knowledge sharing and agroecological movements,
- » Agroecology and natural resources in a changing climate: water, land, biodiversity and territories,
- » Agroecology and sustainable food systems,
- » Public policies to develop agroecology and promote transition.

## Agroecological concepts, systems and practices

Increasing land degradation, loss of valuable agrobiodiversity and pollinators, and climate variability were highlighted as significant threats to achieving food and nutrition security. The reduced number of farmers, and erosion of their incomes, was also presented as a serious issue in Europe. To ensure global food and nutritional security, two paradigms are often confronted:

- » Sustainable intensification can be presented as producing "more with less" or eco-efficiency, which is the maximisation of agricultural products per unit of inputs or natural resources. Sustainable intensification is usually obtained in highly specialised production systems through a gradual substitution of inputs with knowledge.
- » Agroecology is seen as an alternative paradigm, which is based on the increased use of biodiversity, of integrated production systems and diversified landscapes.

Agroecology is also close to the 'Save and Grow' paradigm (FAO, 2011), which addresses the crop production dimension of sustainable food management through an ecosystem approach that draws on nature's contributions to crop growth, such as soil organic matter, regulation of water flow, pollination and biocontrol of insect pests and diseases. Agroecology goes beyond the agricultural production to embrace the whole food system.

At the heart of agroecology is the idea that agroecosystems should mimic biodiversity levels and the functioning of natural ecosystems. Such agricultural mimicry, similar to the natural models, can be productive, pest resistant, conserve nutrients and be resilient to climate change.



The practices that are conducive to the diversification of systems were considered to be the most strategic as they aim to reduce external inputs and enhance ecosystem services, such as nutrient cycling, biological nitrogen-fixing, natural regulation of pests, pollination, soil conservation, biodiversity conservation, carbon sequestration, water filtration and purification. Linking the animal sector with crop production was presented as crucial to an integrated and holistic approach.

The academic world forms a part of the roots of agroecology, its dynamics are more complex and are framed by social, economic and cultural dimensions. Agroecology is a living concept that is still being adapted to realities. The re-composition of agroecology, which embraces the three above-mentioned components: science, a set of practices and social movements is now undergoing emerging consensus. An important detail concerning agroecology is related to the farmers' place in a system as agroecology brings people to the centre.

During the Symposium, agroecology was presented as an inclusive approach that has the potential of including all food producers in their progress towards a more sustainable farming system.

## **Research, innovation, knowledge sharing and agroecological movements**

Learning, education and knowledge sharing are central processes that can support the expansion of the practical and political aspects of agroecology and empower food producers. In agroecology research and learning processes, there is a shift from the classical transfer of technology models of research and development to a decentralised, horizontal, bottom up and participatory processes of knowledge creation, tailored to the unique circumstances found in rural, urban and peri-urban contexts.

As much knowledge is produced outside academia, it was strongly emphasised there is a need to support self-organized research that strengthens local organizations of farmers and their federations. This will have the advantage of strengthening the capacity of farmers and citizens and will facilitate transdisciplinary innovations to bridge different knowledge systems and horizontally spread agroecological innovations.

The request was made that the concept of innovation be perceived broadly to include technical innovations, as well as those that are conceptual, methodological, social and institutional, which are required to achieve agroecological transition and transformations.

The private sector was mentioned in relation to its role in fostering innovation and contributing to agroecological innovation. An example was given of companies that promote the preservation of nature by pursuing sustainable agriculture practices, while working towards minimizing their environmental impacts and carbon footprints.

The links between agroecology and high and low-technological advances were considered to be of interest and that they should be studied. The debate was raised concerning the possible contradictions that may appear between technology and farmers' autonomy, which is seen to be an important aspect of agroecology.

Moreover, it was considered important to ensure that innovations and outcomes of research remain in the public and collective realm. Open innovation and data are of increasing concern, as there are large gaps in political and ethical frameworks guiding data ownership.

## Agroecology and natural resources in a changing climate: water, land, biodiversity and territories

The effect of climate change in Europe and Central Asia remains a primary issue. The region is suffering from the effects of climate change: water scarcity, salinity and extreme weather events. Agroecology is a possible solution, as it has the potential of adapting agroecosystems to climate change, as well as mitigating its effects.

The ecological strategy of agroecological systems comprises the replacement of fossil fuels by ecosystem services underpinned by biodiversity. Inputs requiring large amounts of fossil fuels for their production such as inorganic nitrogen fertilizers, pesticides, and imported animal feed, are replaced. This is achieved by investing in biodiversity at all levels from soil to landscape and involving people collaboratively. The system relies on local resources and is intensive in its observations thinking and knowledge.

Highlighting the sociocultural aspects of farming systems led to the discussion of the environmental and social impacts of investments related to indigenous people and their right to land. Significant natural resources are often found within indigenous peoples' territories of residence and economic activity.

The importance of the dynamic management of agricultural biodiversity (called *in situ* and on-farm), which has been developed throughout the world to renew agricultural biodiversity, was accentuated. In this respect, food producers are insisting on their right to have access to seeds, to exchange them and for peasants to widely develop breeding programmes to ensure food security.

## Agroecology and sustainable food systems

It was recalled that over 80 percent of the food in the world is sold through local, peasant, regional and informal markets, demonstrating that it is not possible to rely on global markets alone to feed the world. Landscapes with small and medium-sized farms have demonstrated they are better able to support local economies and farmer's well-being as compared to landscapes where there are larger export-oriented enterprises.

It was considered that, agroecology could potentially ensure access to a diverse and nutritious diet for people at all income levels. Growing evidence suggests that agroecology, by implying diversified farming systems, facilitates the diversification of diets for producers, households and consumers through the increased consumption of a range of important nutritional elements that are often missing in diets based only on the staple cereal crops.

Public procurement was seen as being one of the most significant opportunities, among actions governments may take to encourage adoption of agroecology. It was considered important that governments reinvest in agriculture, through public procurement programmes for agroecological producers, by adapting procurement protocols to the local realities of agroecological production. Further, governments have an important role to play in the development of innovative market models and have a key role in building local economies

and markets, as they govern food chains. Also mentioned was support to innovations with, for instance, the creation of food councils at the local, regional and national level and the need for subsidies to establish local markets. It was also suggested governments could focus on regulating the market, thereby ensuring fair prices for farmers.

## Public policies to develop agroecology and promote transition

The challenge is to address the lock-ins of the transition towards agroecology, especially in Europe where there is a high dependence on inputs and a strong role of input providers and the food chain sector in the Agricultural Knowledge and Innovation System.

The importance of having a universal framework, such as the Strategic Development Goals (SDGs), was recalled, where Goal 2 (Zero Hunger) is connected to achieving all other goals. Zero Hunger is considered to be the strongest leverage in dealing with, among others, health, education, climate, water, biodiversity, inequity, gender equality, decent work, sustainable communities, life on land and below water.

There has already been a change, as many agroecology initiatives have been developed and it is important to move beyond niche thinking. It will be valuable to develop opportunities that can overcome the constraints that prevent change, and to support the policies required to develop agroecological practices and progress in the design of agroecological systems. Several existing opportunities were presented and highlighted during the discussions that would facilitate transition to agroecology.

For conventional farmers and policy-makers, who question the economic performances of agroecological systems, it is important to prove that agroecology can be profitable and that agroecology goes beyond short-term performance and benefits society. Data show how diversified agroecological systems can compete with the productivity of conventional systems, and how they increase biodiversity and the resilience of the production system. It was emphasised that increased data on externalities is needed to reverse the dependency on subsidies that support conventional farming, despite the high cost to society. In this respect, farm performance parameters and measures of success should go beyond the common micro-economic parameters. Performance assessments need to be designed and tested that are integrative, systems-based, taking multi-perspectives, are participatory and reflexive.

An urgent need was expressed to address the means and incentives that would encourage conventional farmers to move towards transformative change, instead of their stopping at an incremental change. These incentives are fundamental during the transition period when farmers must face uncertainty and the transition costs of readapting an ecologic and socio-economic system.

Examples of policies, at the European and national levels, were presented that already harness and support transformation towards agroecology. These are the French Agroecology Project or the Organic Law in Romania. Regarding organic agriculture, it was recognized that organic farming is largely rooted in agroecological approaches, both in principles and actual practices, and it was recommended that the synergies and co-evolution within agroecology and organic farming be considered.



## CONTEXT

The **Regional Symposium on Agroecology for Sustainable Agriculture and Food Systems in Europe and Central Asia** was organized by the Food and Agriculture Organization of the United Nations (FAO) and the Government of Hungary, with the support of the Government of France.

The present Symposium was organized following the International Symposium on Agroecology for Food Security and Nutrition organized by FAO in Rome in September 2014, which recognized the role that Agroecology can play in food security and nutrition, and three other regional multistakeholder Symposia 2015 in Latin America and the Caribe's (Brasilia, Brazil), sub-Saharan Africa (Dakar, Republic of Senegal) and Asia and the Pacific (Bangkok) Thailand.

This Regional Symposium for Europe and Central Asia brought together 180 participants from 41 countries (See Annex 6 Participants List) representing research, government, civil society, including farmer and consumer organizations and non-governmental organizations (NGOs), indigenous peoples, and the private sector to facilitate better understanding of the role of agroecology in contributing to sustainable food systems in the Region.

The meeting confirmed that FAO's approach to agroecology should be based on regional and local realities as well as economic, social and environmental conditions. Based on these discussions, participants adopted recommendations for the development of agroecology in Europe and Central Asia (see Annex 1 Recommendations).

### Contents of the Symposium

The symposium was guided by a **Multistakeholder Advisory Panel** (See Annex 5).

The discussions started with a High Level Panel and were organized as six sessions. The agenda can be found in Annex 4 – Final Agenda. This report provides an overview of the Regional Meeting, divided into the following categories:

- » High Level Panel
- » Agroecology: concepts, systems and practices
- » Research, innovation, knowledge sharing and agroecological movements
- » Agroecology and natural resources in a changing climate: water, land, biodiversity and territories
- » Agroecology and sustainable food systems
- » Public policies to develop agroecology and promote transition

General information and resources (including videos and summaries of the presentations) are available to the public on the website: <http://www.fao.org/europe/events/detail-events/en/c/429132/>.

A recording of the webcast can be found on the event Web page: <http://www.fao.org/europe/events/detail-events/en/c/429132/>, under 'webcast videos'.



## 1. HIGH LEVEL PANEL SESSION

The Regional Symposium on Agroecology in Europe and Central Asia was opened with the High Level Panel Session:

- » **H.E. Sándor Fazekas** – Minister of Agriculture, Hungary
- » **José Graziano da Silva** – Director-General, Food and Agriculture Organization (FAO) of the United Nations
- » **H.E. Serge Tomasi** – Ambassador, Permanent Representative of France to the United Nations Agencies for Food and Agriculture in Rome
- » **Aldo Longo** – Director for General Aspects of Rural Development and Research, DG Agriculture and Rural Development, European Commission

Figure 1. **Opening speech by FAO Director-General José Graziano da Silva**



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## Summary of the speeches

H.E. Sándor Fazekas  
Minister of Agriculture, Hungary

H.E. Sándor Fazekas expressed his satisfaction that Hungary could host this event on agroecology and emphasised that agroecology complies with the Sustainable Development Goals, especially those concerning sustainable agriculture, biodiversity, the responsible use of natural resources and rural employment, which explained why agroecology had been embraced by a United Nations specialised agency. H.E. Sándor Fazekas insisted on the need for global cooperation among the Governments of Member States with the involvement of civil society organizations, the private sector and academia in order to achieve these goals and suggested that a clearly defined agroecological approach could prove to be a common basis for this cooperation.

Agroecological research, practical solutions and the related legislation have undergone substantial development over the past decade. According to H.E. Sándor Fazekas, Hungary and the entire region could benefit from the development of this agricultural approach. Already, Hungary has been able to show substantial results in the field of agroecology, including:

- » The Hungarian Government National Rural Development Strategy in 2012. The national government places great emphasis on the protection and sustainable use of natural resources and values, on the improvement of the rural natural environment, and on a sustainable agriculture and production policy, in respect of which the development of organic farming is also very important. An Eco-Action Plan has been designed to implement the Strategy, since its introduction:
  - » more than 30 000 farmers have been able to buy state owned land;
  - » support has been provided to beekeepers who have achieved substantial results increasing the number of bee colonies by four thousand colonies;
  - » locally produced and organic food is promoted in school canteens.
- » A cultivation ban on genetically modified organisms, has been laid down in the Hungarian Constitution, to ensure Hungarian families can eat healthy food and the initiative 'Alliance for a GMO Free Europe' was launched last year, and has so far been joined by 11 Member States and six countries outside the European Union.
- » A 'National Strategy on the Preservation of Biodiversity' was adopted in 2015 to stop the erosion of biological diversity and the further decline of ecosystem services by 2020.
  - » Over the past few years, the populations of protected indigenous animal species have begun to rise, and the status of most protected indigenous and endangered agricultural animal species has been stabilized.
  - » More than 5 000 saplings and grafts of landrace fruit varieties have been distributed, thus contributing to the preservation and protection of indigenous landraces present in the Carpathian Basin.



José Graziano da Silva  
Director-General, FAO

José Graziano da Silva noted that this regional symposium on agroecology took place just after the United Nations Climate Conference, COP22, in Marrakech. This event marked an increasing recognition of the importance of agriculture and food systems for sustainable development. Actions in agriculture and food systems offer a 'triple win', at the same time they help us tackle climate change, extreme poverty and hunger. José Graziano da Silva recalled that poor family farmers of developing countries are the majority of the nearly 800 million people who still suffer from hunger and are the most vulnerable to the impacts of climate change. Failing to support family farmers would also undermine efforts to keep global warming at safe levels, as called for by the Paris Agreement. José Graziano da Silva recalled that the agricultural sectors account for around 20 to 30 percent of total greenhouse gas emissions (GHG). There is no trade-off in agriculture: the sector can mitigate the effects of climate change while adapting, and José Graziano da Silva expressed there is no better example than agroecological techniques.

Addressing transformation of agriculture, José Graziano da Silva insisted that innovations were needed, to be more productive, using fewer resources and generating less impact on the environment. It will be necessary to go beyond sustainable intensification. Increasing the efficiency of farming with precision inputs, improved seeds and other techniques is important, but will not be enough to reduce agriculture's environmental footprint.

As in many parts of the world, new areas are still being cleared to answer the growing demand for food, better coordination of farm and non-farm natural resource management is necessary, and the integrated approach of agroecology could be an answer. José Graziano da Silva announced that, in this regard, the FAO is committed to exploring the fullest potential of agroecology. Further, there was a need to adopt a vision of sustainable agriculture that provides food supplies, ecosystem services and climate resilience, especially to the poorest people. To address this need, FAO has set up a website dedicated to agroecology, the 'Agroecology Knowledge Hub'.

H.E. Serge Tomasi  
FAO Ambassador, Permanent Representative of France to the United Nations Agencies for Food and Agriculture in Rome

H.E. Serge Tomasi expressed the importance of promoting a new vision of agriculture that can integrate economic performance, social promotion, and preservation of natural resources and capital. There has been extensive mobilization of researchers, farmers' knowledge and technical expertise from the five continents gathered for the organization of the international and regional meetings on agroecology.

France provides FAO's work on agroecology with financial, political and scientific support in the global context of the 2030 Agenda of the Sustainable Development Goals and the Paris Agreement on Climate Change. H.E. Serge Tomasi also recalled the initiative 4/1000, which was launched one year ago during the Conference of the Parties (COP21).

H.E. Serge Tomasi described policy engagement in agroecology at the national level in France. Since 2012, France has been engaged in national projects to develop agroecology, and in 2014



the Law for the future of agriculture, food and forest set an ambitious goal to involve 50 percent of farmers in agroecology by 2025. The project has a multistakeholder approach and mobilises:

- » researchers to help develop new solutions using this knowledge for intensive agriculture;
- » farmers to harness agroecology in their ecosystem-based production by using fewer pesticides;
- » the private sector to value agroecological products and their quality.

As first results, agroecology has been inserted into agriculture teaching programmes, 250 farmers' Groups of Economic and Environmental Interest (GEEI) were created to develop agroecology at the territorial level, and an agroecological assessment tool for farmers is now online. H.E. Serge Tomasi insisted on the role of public policies to support transition towards sustainable farming and highlighted the role of FAO, as being the best place through which to diffuse knowledge and good practices, to identify research needs and to promote dialogue and exchange among partners. FAO could, through the creation of an ambitious roadmap, promote agroecology and capitalize on the results of these international and regional symposia on agroecology.

Aldo Longo

Director for General Aspects of Rural Development and Research, Director-General  
Agriculture and Rural Development, European Commission

Aldo Longo highlighted that two days before the Symposium the European Commission adopted a communication: 'Next steps for a sustainable European future', closely linked with the 2030 Agenda, which gives the European Union (EU) the opportunity to shift its strategy towards a sustainable future within the EU, as defined by its partners. During the 2017 work programme, the European Commission will focus on the common agricultural policy (CAP) to maximise its contribution to the SDGs. Aldo Longo announced that consultation on these topics will take place, and the EU will continue to build on the results of the consultation to ensure that European agriculture can become more sustainable. For this to occur the European Commission has started a dialogue with stakeholders on the future of the CAP and the results of the Symposium will feed future considerations.

Aldo Longo noted the consistency between the different topics of the Symposium and the CAP objectives. Topics such as, making farming in Europe become more compatible with the environment and climate, ensuring farmers have viable means of exploitation and offering new opportunities for those who reside in rural areas, are at the core of the common policies of the European Union. He recalled that the EU is the largest agricultural trade partner in the world, well known for quality and added value.

The three goals of the CAP are: valuable production of food, valuable production of natural resources, and balanced territorial development. These goals are consistent with agroecology as the CAP today places to the fore the common comprehension of private and public good, which is at the heart of agriculture. Farmers are rewarded for the services they offer to society such as landscape, biodiversity and actions to mitigate climate change through, for example, new instruments including Cross Compliance and Green Direct Payments. On the basis of these mandatory elements, the CAP continues to play an essential role in achieving the EU objectives



for the environment and climate. Member States have gone beyond the legal obligation of allocating at least 30 percent of programme resources to voluntary measures, which benefit the environment and address climate change, as more than half of the rural development budget is devoted to environmental and climatic measures.

Aldo Longo explained how diversity was a key characteristic of European agriculture and that agroecology had a role to play in preserving this identity. More than half of all farmers are smallholders and most of the production comes from medium-size family farms, which manage most of the available agricultural land. In order to preserve this diversity, the CAP ensures that smallholders are able to continue to survive. The strength of support to smallholders is mainly through subsidies from Member States.

The CAP also targets knowledge development through financial contributions. Farmers and foresters can request support to participate in training, to set up a demonstration farm, or to participate in farming exchange workshops, which facilitates conversion to sustainable practices. Other European instruments and European policies contribute to the generation and diffusion of knowledge such as Horizon 2020, which is a large research programme that supports farming research as well as agroecological practices. The CAP also brings its support to a new mechanism called the European Innovation Partnership (EIP). This instrument provides support to farmers, researchers as well as decision-makers who meet in small focus groups to seek innovative solutions to specific problems, providing the possibility of testing several solutions and sharing results with the rest of the scientific community.



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## 2. AGROECOLOGY: CONCEPTS, SYSTEMS AND PRACTICES

### The challenges

Following the Green Revolution, and the development of high-yielding plant varieties, it was recognized that a higher quantity of food is produced as commodities, but with many negative consequences related to nutrition, the environment and social and cultural values at the local and global level. The carbon and ecological footprints of these linear and globalised agrifood systems are known to consume beyond safe planetary limits, weakening resilience to environmental change, adversely affecting public health. The paradox is that, despite this abundance, there are still nearly 800 million hungry people in the world along with 1.9 billion people suffering from obesity.

Ram C. Sharma (International Center for Agricultural Research in the Dry Areas – ICARDA –, Uzbekistan) insisted that environmental challenges (biodiversity, water and soils, climate change), to food security in Central Asia such as water scarcity, irrigation induced salinity, increasing land degradation and climate variability that causes extreme heat, drought, frost and pest epidemics poses significant threats to achieving food and nutrition security. Land degradation adversely affects soil fertility and crop yields. Biodiversity is reduced, resulting in declining crop and livestock productivity, escalating production and rehabilitation costs, which in turn reduces farm incomes, people's livelihoods and ultimately threatens food security. Increasing land degradation was highlighted, the loss of valuable agrobiodiversity and pollinators and climate variability, which are mining our production capital and posing significant threats to achieving food and nutrition security. Intensive farming systems are responsible for serious issues that affect water quality and impose additional costs on providing potable water.

Farmers' loss and erosion of income is a serious issue. There is a continuous erosion of farmers' income in Europe and, Michel Pimbert (Coventry University, the United Kingdom of Great Britain and Northern Ireland) noted, many farms would be unprofitable if EU subsidies were withdrawn. The number of farmers are declining every year by about 2 percent with more than an 8 percent decrease in the Czech Republic, Hungary, Poland, Slovenia, Slovakia and the United Kingdom of Great Britain and Northern Ireland. Across the EU only 6 percent of farmers are under the age of 35 and 35 percent of all farmers are over 65 years old. Reverting this challenging situation it is urgent to raise the number of farmers who are considered as the backbone of food security and rural livelihood.

### Beyond productivity: multiple criteria for assessing performance of agriculture systems

As Karlheinz Knickel (Universidade de Évora / Instituto de Ciências Agrárias e Ambientais Mediterrânicas – ICAAM –, Germany – Portugal) explained, intensive agricultural production systems





are not resilient as they depend excessively on external inputs (energy, nutrients, finance, etc.) and have a low buffer capacity to multiple crises (climate change, illnesses, market volatility). Highly specialized farming and production systems are often heavily affected by changes in market prices. The farm financial crises in countries such as Denmark illustrate this point.

Karlheinz Knickel showed that farm performance parameters, and measures of success that have been advocated in the past, have lost much of their credibility and should go beyond common micro-economic parameters. More integrative, systems-based, multi-perspectival, participatory and reflexive forms of performance assessment need to be elaborated and practice-tested. The intrinsic value of farmer's strategies and decision-making should be recognized. Farmer's particular interest in efficiently using the resources available to them, and their location-specific experiential knowledge, are of particular value in today's increasingly resource-constrained and uncertain world.

## The concept of agroecology

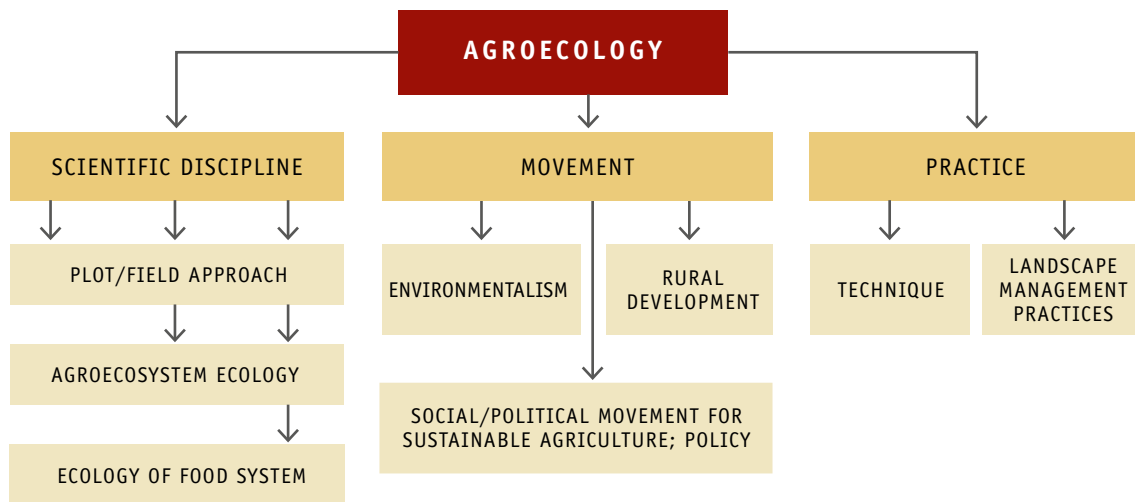
Michel Pimbert (Coventry University, the United Kingdom of Great Britain and Northern Ireland) presented the concept of agroecology. At the heart of agroecology is the idea that agroecosystems should mimic biodiversity levels and functioning of natural ecosystems. Such agricultural mimics, like their natural models, can be productive, pest resistant, nutrient conserving and resilient to climate change. Agroecology is an alternative paradigm for the current food system, which is based on the increased use of biodiversity, of integrated production systems and of diversified landscapes. Several definitions were given, the seminal being that proposed by Altieri in 1995 as, "the application of ecological science to the study, design and management of sustainable agriculture". The scope of the definition was further broadened by Francis *et al.* (2003) to "the ecology of food systems" and by Wezel *et al.* (2009) to the social dimension "agroecology as a science, a movement and a practice".

Stephane Bellon (Institut National de la Recherche Agronomique – INRA/Agroecology Europe, France) investigated pioneer European scholars who have contributed to the development of agroecology over the past century, starting in 1928 he presented the scientific history of this concept. Bellon noted that the academic world is only a part of the roots of agroecology, whose dynamics are more complex and also framed today by social, economic and cultural dimensions. Today agroecology is based on a multicultural dialogue between scientists, farmers and citizens. Farmers active seed selection and plant breeding practices, which have generated the myriads of landraces and animal breeds, is based on the knowledge of generations of farmers. Agroecology is a living concept that is still adapting to realities. The re-composition of agroecology embraces the already mentioned three components: science, a set of practices and social movement is now undergoing an emerging consensus (Figure 2). In this regard, during the discussion, it was stated that the integration of social science into agroecology, and its definition, was an important point in honouring its evolution.

Two days of presentations widely illustrated the different shapes and names that agroecology has in the field, depending on the national and local context, such as organic farming, permaculture, agroforestry or conservation agriculture.



Figure 2. Interpretations of agroecology



(Wezel, Bellon *et al.* 2009, *Agronomy for Sustainable Development*; updated in Wezel 2017, forthcoming book: *Agroecological practices for Sustainable Agriculture: Principles, Applications, and Making the Transition*)

It was recognized that, at the technical level, agroecological practices have the following principles (Altieri, revised 2016 by Nicholls, Altieri, Vazquez):

- » adapting to the local environment, its constraints and opportunities;
- » creating favourable soil conditions for plant growth and recycling of nutrients;
- » diversifying species, crop varieties and livestock breeds in the agroecosystem over time and space, including integrating crops, trees and livestock from the field to landscape levels;
- » enhancing biological interaction and productivity throughout the system, rather than focusing on individual species and single genetic varieties;
- » minimizing soil and water losses;
- » minimizing the use of non-renewable external resources and input (e.g. for nutrients and pest management).

### Food producers implementing and calling for agroecology

Jyoti Fernandez (Farmer/European Coordination Via Campesina –ECVC, The United Kingdom of Great Britain and Northern Ireland) described the motivations, initiatives and expectations of farmers practising and transitioning to agroecology. A vital specificity of agroecology is related to farmers' place: agroecology brings people to the centre of a system. Farmers and fisher folk know how agroecological systems work and the best ways to develop the practices to scale up their agroecological farming models. Jyoti Fernandez insisted that food producers are the backbone of food security in Europe and could end hunger and ensure all people on all income levels have a



diverse and nutritious diet. Their commitment to keeping agroecology alive and its development is very important and they are engaged in managing food security, maintaining soils, maintaining the health of water and ecosystems and protecting the rich varieties of local foods, which are important for our cultural identity.

Jyoti Fernandez insisted on how, across Europe and Central Asia, grassroots food producers combine the strength of a long history of traditional knowledge with the innovative spirit of new entrants. They incorporate the traditional knowledge and skills of the worlds' farming communities with cutting edge producer-led ecological, agronomic, economic and sociological innovations. The ongoing process was also highlighted where la Via Campesina is part of the International Planning Committee for Food Sovereignty (IPC), a coalition bringing together farmers, fisherfolks, indigenous people, agricultural workers, consumers and NGOs. IPC is an FAO interlocutor for food security and multistakeholder processes and represents views debated by social movements across Europe. Over 500 delegates are involved in the Nyeleni process (declaration of the International Forum for Agroecology, Nyeleni, Mali, 27 February 2015), which represents the views of thousands of organizations representing millions across Europe.

## Agroecological systems and practices

Agroecological practices and systems were presented and discussed. These practices cover crop production, livestock and fisheries, from large to small-scale production and within communities. They are based both on scientific and traditional knowledge and innovations.

Alexander Wezel (Institut supérieur d'agriculture et d'agroalimentaire – ISARA-Lyon, France/ Agroecology Europe) presented agroecological practices focusing on crops and Eliel Gonzalez Garcia (Institut national de la recherche agronomique – INRA, France) outlined livestock and agroecology practices. Alexander Wezel mentioned that many agroecological practices already exist around the world and are applied to different degrees in different regions and under various climatic conditions. Practices are often described as one component of agroecology, besides the scientific discipline and the movement, as described in Figure 1. It was stressed that the crop production practices can be applied:

- » **At the field or the cropping system level, examples of practices are:** reduced or no tillage, direct seeding, crop fertilization (split fertilization, organic fertilization, biofertilizer), crop irrigation (drip irrigation), weed, pest and disease management (natural pesticides, biological pest control, allelopathic plants), agroforestry, intercropping and relay intercropping, crop choice and rotation and cultivar choice).
- » **At landscape or territorial level, examples of practices include:** management of landscape elements (integration of semi-natural landscape elements at field, farm and landscape scales).

At field, farm and landscape level the different presentations gave a variety of examples of agroecological practices, enhancing ecosystem services such as direct seeding, green manures, drip irrigation, diversified crop rotation, mixed legumes, composting, intercropping, agroforestry and conservation agriculture. In addition to the integration of livestock, also considered important were the fostering of linkages and knowledge sharing between sustainable forest management and agroecology, and fisheries and agroecology.



Practices that are conducive to the diversification of systems are considered to be the most strategic as they aim to enhance ecosystem services (such as nutrient cycling, biological nitrogen-fixation, natural regulation of pests, pollination, soil conservation, biodiversity conservation, carbon sequestration, water filtration and purification) and reduce the need for external inputs. Alexander Wezel (ISARA-Lyon/Agroecology Europe, France) explained that diversification practices are not yet very developed but some, such as diversified rotation and cultivar mixture, have good potential for development in the following decades as they can be integrated into conventional agriculture without requiring a high degree of system change. Intercropping, relay intercropping and integration of semi-natural landscape elements at the field and farm scale also have the potential of being developed, even in conventional agriculture where they require fundamental and systemic changes.

In this context, agroecology was presented as an inclusive approach and as having the potential of including all food producers in the progress towards a more sustainable farming system. Linking the animal sector with crop production is critical to an integrated and holistic approach. The combination provides the advantage of closing cycles (on-farm nutrient cycle), valorizing abandoned grassland, dietary diversification and added value (milk processing, cheese).

Eliel Gonzalez Garcia (Institut national de la recherche agronomique – INRA, France) outlined the links between livestock and agroecology with the main research issues for the redesign of animal production systems in the twenty-first century.

Despite its strong presence and role in the rural landscapes the animal sector has been largely ignored in the agroecological debate. The animal sector is urged to change its practices, as it is often considered as a major cause of the world's most pressing environmental problems. The animal sector represents 14.5 percent of the world's GHG emissions, 30 percent of ice-free land and consumes 35 percent of crop production. Five principles were proposed by INRA in support of the transition towards agroecology in livestock production, based on the model of the agroecological principles already mentioned, as follows:

- » adopting an integrated management of animal health;
- » decreasing external inputs by relying on a better understanding and valuation of natural processes;
- » reducing negative environmental impacts and pollution caused by animal production systems (APS) activities by optimizing metabolic functioning of farming systems;
- » enhancing APS diversity by increasing system resilience; and
- » preserving biodiversity by adapting adequate farm management practices. Those principles are not restrictive and may be combined in a range of APS situations and species (from monogastrics to ruminants and fish).

Regarding the implementation of these principles Eliel Gonzalez Garcia suggested linking them with valuing technological advances. This raised the debate on the possible contradictions that may arise between technology and the autonomy of farmers, which is seen as a critical aspect of agroecology.

Zoltán Dezsény (Farmer in Hungary) gave a concrete testimony of his ecological farm, which was established in 2013 at Terény, in the north of Hungary. With his associates, Zoltán grows more



than 30 species and 100 varieties in the vegetable cropping system, without the use of machinery, only manual labour. The farm is free of synthetic chemicals and fertilizers. The agroecological practices are on-farm composting; intercropping to repel insect pests; flowering strips to attract beneficial insects; and permanent soil mulch cover to protect and boost soil life. In the future, garden ponds (ecological habitat) are planned as well as native hedgerows, as windbreaks and habitat for nesting birds and wildlife; old variety fruit-tree orchards; and the use of living mulches, in combination with vegetables, to suppress weeds and regulate soil temperature. Currently there is one cow, one heifer and one calf of the 'Brown Carpathian Cattle' breed on the farm. The plan is to enlarge the herd and to practise rotational grazing on abandoned grassland and process milk. The 'adopt the 'Brown Carpatian Cow' programme' is dedicated to preserving this traditional landrace and the on-farm nutrient cycle. The products are marketed through the Community Supported Agriculture (CSA) partnership.

The presentation perfectly illustrated agroecology's holistic approach: diversification of species, linking crop and livestock to close cycles and going beyond production with direct marketing to help create a profitable and resilient system and build cooperation.

Natalia Laino (World Forum of Fisher People – WFFP, Spain) outlined fisheries and agroecology based on artisanal or small-scale fishing. The fish stock and quota are also being debated, and she asked that small-scale fisheries that use selective practices be encouraged, in agreement with the professionals. She emphasized how important it was that scientists and fisheries professionals work together to control and increase production in the areas of shellfish, wild fisheries and aquaculture to help populate our oceans with fish; not only to produce by intensive or industrial plundering of our seas. She recognized the importance of the contribution of scientific knowledge in promoting more productive, sustainable fishing and greater economic benefits for fishers and their communities.

During the discussion it was mentioned there was potential for developing aquaculture fishponds using agroecological parameters.

## Technologies

Regarding technology, it was considered of interest to deepen the role of low and high technologies in agroecology. The debate about technology highlighted diversity in adoption of agroecology. It was clearly recognized that agroecology is an important catalyst in fostering transition.

Jean-François Soussana (Institut national de la recherche agronomique – INRA, France) illustrated how agroecology can be developed through participatory research, supported by advanced knowledge of ecological processes in agriculture and by dedicated technologies (e.g. biocontrol, soil biota indicators) at field and landscape level. Some promising innovative practices were mentioned, related to genetic diversity and root symbioses: the genetic diversity of legumes is used for breeding and increasing biological N fixation with pulses and forage legumes. It has been found that crop rotations with legumes emit less  $N_2O$  during long-term trials than control monocultures, service plants (e.g. allium sp.) develop mycorrhizae that colonize the root systems of crop species such as tomato and inoculating with *Azpirillum* enhances root branching and the uptake of nutrients.





### **3. RESEARCH, INNOVATION, KNOWLEDGE SHARING AND AGROECOLOGICAL MOVEMENTS**

#### **New research model**

Speakers and participants agreed that agroecology is knowledge intensive and brings people to the centre of a system. In terms of research and innovation, agroecology has a different approach to what has been considered the standard for agricultural research and extension.

There is a shift from the classical transfer of technology models of research and development to far more decentralized, horizontal, bottom up and participatory processes of knowledge creation, which are tailored to unique circumstances in both rural, urban and peri-urban contexts. Agroecological solutions respect multicultural dialogue among scientists, farmers and citizens and build on local people's practices, knowledge and capacity to innovate. Emphasis is placed on solidarity, the exchange and building of relationships, cooperation was seen to be at the heart of on-farm research. It is important that different stakeholders continue to work together towards agroecology. Food producers have much experience and traditional knowledge concerning agroecological practices, while scientists can help optimize sustainable farming systems to produce greater economic benefits.

It was made clear that attention should be given to the strategy of massive investment that focuses on agroecological knowledge. Investments and innovations in knowledge would cover soil biology, taxonomy, nutritional characteristics of agroecological products, economics and social science to shift from performance assessments, based on purely economic criteria, to multiple criteria such as social, environmental, cultural, aesthetic and even spiritual.

It was suggested that new assessment methods for research be developed and implemented to encourage participatory and interdisciplinary research, that would bring together different topics such as animals, fisheries and crop sciences, and different fields including agronomy, sociology, economy and policy.

Two critical dimensions are:

- » The time dimension where shorter-term business goals and longer-term outlooks for economic sustainability often have very different implications.
- » The spatial dimension: field, farm or community, watershed or landscape level; the latter was considered as strategic in achieving the transition to agroecology.

The discussion focused on the point that agroecology is a long-term and complex process and includes prospects from different stakeholders on different levels and scales (local, regional and global level; field, cropping system, landscape scale). The challenge remains as to how to face all difficulties at all scales and how to include all stakeholders at all levels. A participatory approach is needed to include everyone, particularly focusing on vulnerable groups. In addition, agroecology is a process and should not oppose different systems, but instead be open to all stakeholders to progress towards agroecology.



## Self-managed research and transdisciplinary innovation

As much knowledge is produced outside the halls of academia, strong emphasis was placed on the need to support self-organized research that strengthens local organizations of farmers and the federations they form. This will have the advantage of strengthening the capacity of farmers and citizens to facilitate transdisciplinary innovations of bridging different knowledge systems, and promoting the horizontal spread of agroecological innovations.

The request was made to view innovation broadly so as to include technical innovations, conceptual, methodological, social and institutional in the transition and transformation to agroecology.

An important element in relation to the above was the call to democratize the governance of research. This would permit citizens and farmers to set upstream strategic research priorities, to allocate funds as well as to become involved in the co-production of knowledge and risk assessment. Their involvement in all the different phases of the research cycle would comprise meaningful participation.

Guy Kastler (Farmer, Réseau Semences Paysannes, France) described that peasants are the only experts in their own fields, and peasant agroecology takes a collective approach that is based on the transmission of knowledge from one peasant to another. The peasant's capacity to observe, and to use indications in the field and on the farm to take appropriate decisions to ensure the sustainability of the agricultural ecosystem, depends on traditional knowledge. The implementation of such knowledge in the contemporary world demands permanent innovation and the constant renewal of knowledge. Guy Kastler spoke of collaboration with several researchers who focus on the exchange and transmission among peasants and recognize the irreducible specificity of peasant knowledge. Researchers can enrich such knowledge with their own data and facilitate networking beyond local confines.

Guy Kastler also insisted on the importance of the dynamic management of agricultural biodiversity (called *in situ* and *on-farm*) developed in all countries of the world to renew agricultural biodiversity.

Dóra Drexler (Hungarian Research Institute of Organic Agriculture, Hungary) illustrated this point with the participatory on-farm organic research network, ÖMKi, which was launched in Hungary 2012 (Box 1).

The co-construction of knowledge and innovation presupposes that agroecology honours the principle of cognitive justice. This principle was considered very important in the discussion, recognizing that different knowledge systems have fundamental rights to exist. A call was also made for greater visibility of women in agriculture; agroecology is seen as a way to move forward on this important issue.

Anna Augustyn (Groupe de Bruges, Poland) deepened the theory about the concept of Participatory Research for Sustainable Agriculture. Noting that seeking adequate methodologies in responding to the major environmental, social and economic challenges, researchers, farmers, rural communities and other actors have increasingly been seeking collaboration for the design and testing of innovative solutions to improve the sustainability of agrarian systems.

**Box 1: Participatory on-farm organic research network, ÖMKi, Hungary**

In Hungary, organic on-farm research, coordinated by ÖMKi, is carried out on more than 120 farms annually. The on-farm network extends from organic arable cropping, to horticulture, viticulture and apiaries. Through the on-farm research, a network of organic farms is being established, which carry out agricultural experiments in Hungary. These experiments are performed in lifelike conditions, on actual working farms in conjunction with the farmers' defined production goals.

The subjects of the experiments are decided together with the researchers and the farmers. The experiments, carried out in dynamic, everyday farming conditions, test how the given varieties, cultivation technologies or seed mixtures perform under organic circumstances. In this way the participating farmers receive direct feedback about their own growing area and cultivation techniques. At the same time, as there are a number of participating farms in each experimental area, the results provide a holistic picture of the tested organic growing practices, and the most suitable solutions in different agroecological scenarios can be identified.

The initiatives, typically using participatory, action and learning-oriented methodologies are manifested in various ways. These can be bottom-up actions oriented towards sustainability and agroecological transitions, where the intention of researchers is to assist vulnerable communities increase their adaptive capacities and resilience. Another example includes research projects and networks that have been established in more formal settings such as the European Union Horizon 2020 Programme. The Programme has made particularly use of the multi-actor approach, which means bringing together diverse actors to foster innovation for sustainable agriculture.

The participatory character of such projects also offers an alternative perspective in regard to established scientific regimes. With stronger emphasis being placed on social innovation, knowledge flow and interactions between people or organizations, the main outputs are often different from those that are typically accounted for in the evaluation of scientific performance (e.g. those based on the journal impact factor or patents). Anna Augustyn mentioned that, as the long-lasting impacts of the research in such a form may require considerable time to be observed, the promises of these participatory approaches were still to be met.

**Strategy for transition**

Transition towards agroecology in Europe and Central Asia will require an open innovation strategy that takes advantage of the knowledge developed by farmers, and integrates their advances within a multi-disciplinary and participatory approach that reconnects agricultural sciences, ecology and social sciences.



Primarily by increasing funding for agroecology, the public research system must also be reinvented as not all current research institutes are equipped to engage in participatory processes. They therefore need to be challenged in terms of their operational procedures, culture, reward and their incentive structures and the type of training scientists receive. Training of scientists in agroecology should enable them to engage in intercultural dialogue and to work in a meaningful and respectful way with women and men farmers.

It was noted that the common policy brings its support to a new mechanism called the European Innovation Partnership (EIP). This instrument supports farmers and researchers as well as decision-makers who meet in small focus groups, to discover innovative solutions to specific problems, with the possibility of testing several solutions and sharing results with the rest of the scientific community. Bringing together diverse actors has been recognized as being an efficient way to foster innovation in sustainable agriculture.

The knowledge focus of EIP is not only within the European Union, this partnership can find expertise beyond the borders of Europe and share results with the rest of the world.

## Property rights

It is important to ensure that innovations and the products of research remain in the public and collective realm. Essentially, this means avoiding intellectual property rights and regimes and other forms of enclosure of knowledge and processes of commodification.

Open innovation and data are increasing concerns, as there are wide gaps in political and ethical frameworks for data ownership. Good data held by practitioners on agroecology, not only on producing food but also adaption to climate, soil preservation, biodiversity, need to be protected. Defining or developing ethical protocols covering data should be a priority.



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## Evidence base

Development of agroecology is also affected by the lack of data and evidence base of the performances of agroecological systems. This data is very much needed, especially for policy-makers, which is further highlighted in Section 6 on public policies. It was mentioned that the limited amount of data is not only related to funding, but is also a matter of collaboration between different stakeholders: civil society organizations who have much data in grey literature, researchers, and policy-makers who might have statistics that could be used, for instance, on family farmers.

## Learning approaches

Learning, education and knowledge sharing are central to supporting the expansion of the practical and political aspects of agroecology and the empowerment of food producers.

Alazne Intxauspe (Farmer EHNE-Bizkaia, Spain) a peasant farmer, who is dedicated to ecological horticulture, presented three experiences of training at her organization where the young are placed at the centre. Training is a strategic issue for her organization, as she is a member of La Via Campesina. Very often it is said that training is expensive, but she insisted that what is expensive is a person without knowledge. It is ignorance that is expensive, training can change the mind-set and is important to sensitise people about agroecology in order to achieve sustainability and a more equitable society.

Alazne Intxauspe stated that training should be accessible to everybody. The involvement of the young in agricultural sustainability is extremely important as is increasing the involvement of young people. This explains why the prioritization of young people is at the centre of the different comprehensive courses for farmers, consumers, technicians, local governments representatives, rural development people and teachers.

In the presentation made on French Agroecology Law, Pierre Schwartz (French Government, France) showed how France was taking advantage of the EIP in research and development to strengthen innovation and the diffusion of agroecological knowledge and practices. In this project, the training programmes and educational frameworks for farmers were adjusted to more effectively include agroecology-related knowledge. An agroecological self-assessment tool was also developed to allow farmers to measure their practices and performances and to compare them with those of other farmers. It is available online ([www.diagagroeco.org](http://www.diagagroeco.org)) free to use anonymously.

## Digital tools

As recalled by José Graziano da Silva, Director-General, FAO, during the High Level Session, the future of agriculture is not input-intensive, but knowledge-intensive. In this regard, FAO has launched a dedicated agroecology website: the Agroecology Knowledge Hub, following the expectations addressed during the former regional meetings.

Another platform mentioned is the Agreenium platform in France, which held a massive open online course (MOOC) on agroecology in French and English. The first session, at the beginning of 2016, had around 12 000 students.





It was considered important to develop mechanisms and bridges between different agroecology knowledge and practices-related platforms and websites, including the European Innovation Partnership Network, Agroecology Europe, the Agreenium, More and Better Network and the European Agroecology Learning and Training Network.

Rupert Dunn (Baker and farmer in the United Kingdom of Great Britain and Northern Ireland) and Colin Anderson (Coventry University, the United Kingdom of Great Britain and Northern Ireland) presented an initiative that was developed to build horizontal networks for agroecology learning and training in Europe. The European Agroecology Learning and Training Network (EALTN) is in an early stage of development and is focusing on supporting local, regional, national and European networks for training and learning. The establishment of this network is a significant step forward in consolidating, amplifying and scaling up agroecology in Europe by focusing on farmer-to-farmer exchange, horizontal learning and bottom up forms of innovation. EALTN focuses on bringing farmers into a dialogue of knowledge with others including for example researchers, urban dwellers, engineers, software developers and policy-makers.

### **Formal and informal education**

Another important issue that is related to knowledge diffusion and sharing is the incorporation of agroecology principles and innovations into the curricula for informal and formal, primary and higher education. The current agricultural development models are expected to facilitate the creation of platforms for exchange of knowledge among sectors and actors. At the field level, the incorporation of agroecological approaches, practices and curricula was mentioned in relation to the FAO-initiated Farmer Field Schools Integrated Pest Management projects. A strong point was made for primary education that was highlighted as shaping society, being the first place where formal knowledge was received. It was considered important that children experience agriculture so they develop an emotional connection to nature and become more involved citizens and consumers.

In conclusion, it was also clarified that agroecology should not be expected to be the solution for everything. Agroecology is not a magic tool that will solve all problems, but must be seen as an incentive to shift the mind-set towards a more holistic approach in the agricultural and food sectors, including a new way to drive research, to consume and to elaborate public policies.




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## RECOMMENDATIONS FORMULATED BY THE PARTICIPANTS RELATED TO RESEARCH, INNOVATION, KNOWLEDGE SHARING AND AGROECOLOGICAL MOVEMENTS

1. Knowledge transmission requires the redesign of educational programmes to integrate agroecology into the **curriculum of non-formal and formal education** (in primary and higher education), following the principles of the Global Action Programme (GAP) on Education for Sustainable Development (ESD).
  2. Support knowledge exchange, in particular **horizontal exchange** between food producers (farmer to farmer and Farmer Field Schools – FFS – methods), adapting advisory services and extension services to agroecology with specific attention paid to climate change adaptation and mitigation.
  3. Recognize, value, support and document **ancestral knowledge** and modern innovations, traditions, pastoralists and peasants' local wisdom. Include participatory action research, the co-production of oral and written knowledge and cultural practices that address the true needs of communities, and particularly considers the needs of women, indigenous peoples, vulnerable groups and youth. Ensure that innovations and the products of research remain in **the public and collective domains** according to Article 9 in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).
  4. Develop mechanisms and bridges among different agroecology **knowledge platforms** and websites including the European Innovation Partnership Network and FAO.
  5. Promote and support **agroecological practices that reduce external inputs** – specifically seeds, fertilizers, pesticides, animal feed and fossil fuels; to enhance soil capacity and the health of agroecosystems, close cycles and maintain productivity, stability and resilience.
  6. **Document impacts of agroecology** on-farm income, productivity and farmers' livelihoods and develop better data on the evidence based on externalities such as social and environmental costs and benefits of agroecological systems, possibly in collaboration with the work of **True-Cost Accounting in Food and Farming** (TEEB).
  7. Create information materials to raise awareness on the concept of **innovation to include conceptual, methodological, social and institutional** in addition to technical innovations.
  8. **Strengthen public research** by allocating more **funds** to public research in this field, favouring interdisciplinary research to better connect agricultural, ecological and social sciences. Facilitate **changes in research organizations** (incentives and rewards, ways of working and the training of scientists and professionals) and enable farmers and citizens' participation in research including in their community and in the governance of research: setting upstream research priorities, the allocation of funds, participation in production of knowledge and in risk assessments.
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9. Strengthen **self-managed research**: strengthen farmers and extension services networks for research and the horizontal spread of agricultural innovations, strengthen the capacity of farmers and citizens to facilitate transdisciplinary innovations that bridge different knowledge systems and provide farmers and citizens the material security and paid time to engage with and participate in the entire research cycle, including evaluation of research programmes and institutes.

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10. **Organic agriculture** is largely rooted in agroecological approaches, both in principles and actual practices, and most organic farmers respond to an ecological mission as part of their social undertaking. We recommend that the synergies and co-evolution of Agroecology and Organic Farming be considered.

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11. Participatory research and knowledge sharing require openness in the exchange of data. Preserving the **public nature of knowledge** and environmental data is required for the development of agroecology.

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12. Develop **nutrition sensitive** interventions, for example design legume inclusive diversification of food and fodder cropping systems, based on agroecological principles and practices, to improve soil health as an agroecological contribution to the Sustainable Development Goals (SDGs), especially to points 1, 2, 15 and 17.

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13. Recognize and strengthen **farmer seed and livestock systems** and reinforce their contributions to agroecology.

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14. Promote research on the **institutional processes** and governance of agroecology.

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## 4. AGROECOLOGY AND NATURAL RESOURCES IN A CHANGING CLIMATE: WATER, LAND, BIODIVERSITY AND TERRITORIES

### Biodiversity

Plant and animal genetic resources play a more and more important role among non-renewable natural resources. The disappearance of a given species goes together with the complete loss of the genomes determining its attributes, which cannot ever be reconstructed or replaced. In this regard, the Government of Hungary organized a field trip for the participants on the first day of the Symposium, to the Centre for Farm Animal Gene Conservation (Gödöllő), which is dedicated to preserving traditional animal and landraces, and to the Centre for Plant Diversity (Tápiószele).

Attila Kristó stressed that sustainable agroecology is unthinkable without the preservation of agrobiodiversity of the cultivated flora and illustrated the work done with respect to the conservation of agrobiodiversity at the Centre for Plant Diversity (Tápiószele), which develops participatory breeding programmes and gene bank activities to support agroecology. The Centre works in close collaboration with farmers through participatory breeding programmes (see Box 2).

#### Box 2: The Centre for Plant Diversity (CPD)

The Centre for Plant Diversity at Tápiószele is a gene bank with the objective of preserving the agrobiodiversity of cultivated flora. The Centre works in close collaboration with farmers through participatory breeding programmes. It possesses a fully comprehensive gene bank as its tasks cover the development of the national gene bank collections and the characterisation and evaluation of their accessions. Its activities cover the medium- and long-term conservation of seed samples in cold storage rooms and by using meristem cultures for vegetative propagated crops. The Centre is also involved in the multiplication and regeneration of accessions so as to obtain sufficient quantities of high quality seeds for medium and long-term conservation, evaluation and distribution. Other activities include isoclimatic regeneration of Hungarian landraces, ecotypes and populations in their places of origin (*in situ*, on-farm and home garden multiplication), characterisation and evaluation of plant genetic resource (PGR) collections according to internationally accepted descriptor lists. Passports are documented as well as evaluation data for the PGR collections, seed samples are also distributed to users together with the relevant information.



## Ecosystem services are at the core of agroecology

Alain Peeters (Natural Resources Human Environment and Agronomy – RHEA, Research Centre and Agroecology Europe, Belgium) presented the development of agroecological systems based on biodiversity and ecosystem services through an action research programme in Belgium, where the programme's strategies and techniques are implemented in real conditions. The ecological strategy of these agroecological systems comprises replacing fossil fuels with ecosystem services provided by biodiversity. Inputs that require large amounts of fossil fuel for their production, such as inorganic nitrogen fertilizers, pesticides and imported animal feed, are totally replaced and machine fuels are partly substituted. This is achieved by investing in biodiversity at all levels from soil to landscape, even in the production types and people involved in large and micro-farms who work together collaboratively. The system relies on local resources, for instance on endogenous soil fertility, and not on the massive use of commercial inputs. The system is intensive but not in terms of input use; it is intensive in terms of observations, thinking and knowledge.

This ecological strategy is closely linked to economic and social strategies and cannot be isolated:

- » The economic strategy comprises reducing investments and variable costs as much as possible and increasing selling prices by targeting high quality products sold in short and local marketing chains, by processing products whenever possible, and by a smart diversification of activities. The system does not seek maximum yields but a good income. Compared to conventional systems, this includes similar or higher income, and a system that is more resilient to price volatility on the world market. Agroecology also increases farmers' welfare.
- » The social strategy is to recreate jobs in the agricultural sector by, for instance, providing opportunities to young farmers to establish micro-farms on large farms for the development of highly profitable labour-intensive products. These micro-farms and the large farms are part of a collaborative and circular economy, where partners adopt a proactive cooperative approach for diverse activities including product marketing.

The efficiency of the three strategies, ecological, economic and social, is assessed using indicators that have been documented in scientific studies. The results showed that ecosystem services provided by biodiversity are sufficiently efficient for achieving an income of about 1 500 euros per ha which is higher than the average income on conventional farms in the same region. There is also a training programme to disseminate the system.

## Soils

Roberto Garcia Ruiz (Jaen University and Expert Group for Technical Advice on Organic Production – EGTOP, Spain) presented the importance of preserving soil health, soil biodiversity and nutrient cycles. Soil health is essential to providing a continued capacity for soil to function as a vital living ecosystem that sustains plant production. Feedback processes among soil resources, environmental conditions and functional types of organisms, are critical for the preservation of soil health and soil biodiversity, and for maintaining sustainable natural



ecosystems. A significant scientific challenge is to provide science-based recommendations, adapted to local knowledge, to design cropping systems with a set of these feedback processes that resemble ecological principles of sustainability. Agroecology aims to re-establish these regulatory processes, which not only operate at the local (farm) but also at the landscape scale, to enhance and preserve soil health and biodiversity without compromising yield. In addition, agroecology management practices are designed to retain nutrients within the agroecosystems and to enhance the temporal and spatial synchrony between nutrient supply and crop demand for nutrients. Organic matter, crop diversity and the implementation of landscape elements are crucial to tight nutrient cycling and to enhancing soil biodiversity, biological interactions and soil health, which are essential to agroecosystem resistance and resilience.

Agroecological farming systems rely on local resources, for instance on endogenous soil fertility, and not on the massive use of commercial inputs. The system is intensive but not with input use; it is intensive in observations, thinking and knowledge. Compared to conventional systems, the ecological strategy of agroecological systems ensures the system is more resilient to climate change, alleviating the effects of climate change by reducing GHG emissions and by storing carbon in soils and vegetation. Agriculture benefits from this as, for instance, adaptation and mitigation to climate change is increased, as well as regulatory processes of the soil (e.g. retaining nutrients), erosion control, soil health, pollination and pest control.

The consistency with the *4/1000 Initiative, Soils for Food Security and Climate* was recalled. This initiative aims to improve the content of soil organic matter and promote carbon sequestration in soils through agroecological practices. The scientific committee gathered one week before this present Symposium during the COP22 in Marrakech in November 2016.

## Resilience to climate change

The effect of climate change in Europe and Central Asia remains an important issue. The region is suffering from the effects of climate change: water scarcity, salinity and extreme weather events. Agroecology is a possible solution as it has the potential to adapt agroecosystems to climate change as well as to mitigate its effects. Agroecological systems reduce GHG emissions, are less dependent on energy from fossil fuels and sequester carbon. Agroecology promotes integrated production systems and by enhancing ecosystem services and enhancing soil health, increases the adaptive capacity and resilience of agricultural production to predicted future changes in the climate.

Bakhitbay Aybergenov (Centre for Support of Farmers and Entrepreneurship, Uzbekistan) highlighted the agroecological adaptation put in place in the arid conditions of the Southern Aral Sea region to deal with climate change and water scarcity. The climate of Karakalpakstan is sharply continental, dry, with high temperatures in summer and cold in winter, precipitation is low at about 100 mm per year, while evaporation is 600 to 900 mm. Water scarcity is one of the consequences of climate change, and has become the main social-economic and ecological problem. In dry years, water availability is only 16 percent of the amount consumed during flood years. The main activities of the rural population in the Southern Aral Sea region – Karakalpakstan – are irrigated agriculture and livestock. However, in recent years, the people in the Republic





of Karakalpakstan are periodically subjected to great difficulties related to water scarcity in the river Amu Darya.

The main problems in agriculture in Karakalpakstan are soil salinity (more than 95 percent of the land is affected by salinisation), decreased organic matter in the soil, low biological activity because of the excessive desiccation of soils and deforestation. Conservation agriculture and agroforestry could solve these problems, as stubble and straw (plant residues) enrich the soil with organic matter, prevent excessive drying of the soil, reduce the seasonal accumulation of salts, smooth fluctuations of temperature and eliminate soil erosion. Research has shown that mulching reduces the seasonal accumulation of salts by 1.5 to 3 times, retains soil moisture 2.5 to 3.2 percent more and increases the biological activity of the soil. Plant residues will reduce the need for irrigation water by 15 to 25 percent because of reduced salt accumulation and evaporation of soil moisture.

Melike Kus, (The Nature Conservation Centre, DKM, Turkey) highlighted the fact that agriculture is highly sensitive to climatic changes and extremes, as the success of production is mainly dependent on convenient environmental conditions during growing and harvesting periods. The approach taken by the Nature Conservation Centre was described as using the ecosystem services framework to adapt agriculture to climate change, which has been developed in Turkey and is increasing the adaptive capacity of agricultural systems (see Box 3).

### **Box 3: The use of the ecosystem services framework for the adaptation of agriculture to climate change at The Nature Conservation Centre, DKM, Turkey**

The Nature Conservation Centre develops ecosystem services approaches to enhance the adaptive capacity of agricultural production. The projects include on-site implementations of agroecological practices and, in order to better understand the impacts of these implementations on biodiversity, monitoring programmes covering plants, birds, small mammals and butterflies. Farmer-to-farmer learning mechanisms and dissemination tools are also being developed and put into practice through the projects. The ecosystem services approach provides a holistic approach to implementations of climate-related responses and serves as a framework for defining policies. Conserving and improving the ecosystem services used by the agricultural sector (such as erosion control, pollination, pest control, etc.) will enhance the adaptive capacity of agricultural production to predicted changes in climate.

Methodologies are being developed, based on this perspective, to map ecosystem services and determine those who are vulnerable and faced with climate change. Furthermore, on the ground implementation recommendations are being developed to enhance and restore ecosystem services that provide benefits to agriculture and reduce vulnerability to climate change. Throughout these activities, DKM works closely with farmers, academicians and governmental institutions to bring innovative and adaptive solutions to challenges faced by the social-ecological and economic dynamics in agricultural production schemes.



## Access and right to natural resources

Highlighting the sociocultural aspects of farming systems led to the discussion of the environmental and social impacts of investments related to indigenous people and the right to land. It was recommended that companies should engage in environmental assessments and study the social and traditional lifestyle of local inhabitants. Furthermore, we must be aware that it may take time to create awareness of the potential of agroecological practices among farmers and decision-makers and for them to adapt their agroecology practices.

Several points of discussion focused on access to seed and genetic resources that are present at the beginning of life and in the food chain. It was stated that, as a food producer, it is not easy to access genetic resources, especially for different cultivars of both plant and animal species. In addition, it was mentioned that food producers should have the right to have access to seeds, to exchange them and for peasants to be able to widely develop breeding programmes to ensure food security. Civil society organizations insisted on the importance of the recognition of peasant rights and the recognition of collective peasant rights to conserve, use, exchange and sell their local seeds and to participate in decision-making processes. Also emphasised was the relation with the Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their use. The implementation of farmers' rights, as stated in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), was emphasised as a major recommendation.

Rodion Sulyandziga (Centre for Support of Indigenous Peoples of the North, The Russian Federation) described how access to land and natural resources is the basis for indigenous peoples' livelihood and well-being. These two interrelated issues have a long history in the Russian Federation with the frequently changing nature of relations between the State and the Aborigines as well as their inhabited land. Over the past 300 years State policies, in relation to indigenous people, have gone through several ideological fluctuations – from the policy of non-interference and the preservation of the traditional Aboriginal way of life, to attempts to fully integrate and modernize their lifestyle. The most significant change to the traditional way of life, and the system of traditional environmental management, was made in the sixties with resettlement of residents from small to larger settlements. These relocations began to destroy the historically shaped, and ecologically balanced, settlement structure and indigenous peoples' environmental management systems. This caused mass unemployment, alcoholism, family break ups and destruction of traditional culture. These events first led to decreased population growth and then reduction of the indigenous population.

It happens that the key natural resources are in the territories of residence and economic activity of the indigenous people of the North, Siberia and Far East Russia. This means that in the coming decades, even centuries, the country's economy will grow at the expense of industrial development of mineral resources on the lands of indigenous people. This will lead to an inevitable clash of two civilizations, different mentalities, often having incompatible views in relation to the outside world. On the one hand, the traditional rules and regulations that have been formed and established for thousands of years with their economic activities and, on the other hand, the technological impact on the lands of the first people who have been occupying these territories. It is impossible to solve this problem without addressing the rights of aboriginal people to participate in matters affecting their right to land and natural resources.



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## RECOMMENDATIONS OF THE PARTICIPANTS RELATED TO **AGROECOLOGY AND NATURAL RESOURCES IN A CHANGING CLIMATE: WATER, LAND, BIODIVERSITY AND TERRITORIES**

15. Promote policies, practices, research and create materials to raise awareness so as to achieve the transformative potential of agroecology in addressing the urgency of **adapting, mitigating and reversing climate change**.
  16. Contribute to the agroecological transition through territorial approaches and organize **pilot farm networks** that act according to the principles and methods of agroecology and share their practices and techniques.
  17. Ensure, recognize, respect and uphold small-scale food producers, family farmers and communities, in particular the **rights** of women, youth and indigenous and nomadic peoples **to land, water, seeds**, inland and coastal waters, forests, commons, biodiversity and territory, also to promote the implementation of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT) and the Voluntary Guidelines for Securing Sustainable Small-scale fisheries (VGSSF) and Farmers' Rights as stated in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).
  18. Closely collaborate with the Commission on Genetic Resources and seek synergies with other relevant processes such as the **Convention on Biodiversity**
  19. Develop national and regional plans for agroecological pathways to sustainable food systems and natural resource management that support the **Sustainable Development Goals (SDGs)** and the **United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement**.
  20. Support the participative development of adequate **criteria for assessing and valuing agroecological systems** and sustainable food systems, and promote their widespread sharing among all actors.
  21. Facilitate the development and implementation of **agroecological practices** also for aquaculture and fishpond systems based on agroecological principles and study options for the better **integration** of aquaculture, pastoralism, livestock and crop systems within territories in order to recycle resources.
  22. FAO should reinforce its processes and strengthen its partnerships to prioritize agroecology in the framework of its Strategic Framework especially in the relevant delivery mechanisms and implement the recommendations through the **Committee on Agriculture (COAG)** and regional conferences and strengthen activities especially linked to **Climate Change and Biodiversity**.
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## 5. AGROECOLOGY AND SUSTAINABLE FOOD SYSTEMS

It was recalled that over 80 percent of the food in the world is commercialised through local, peasant, regional and informal markets, which demonstrates that we cannot rely on global markets alone to feed the world. Landscapes with small and medium-sized farms have shown they are better able to support local economies and farmer's well-being, as compared to landscapes with large export-oriented enterprises. It was mentioned that public spaces are very important for agroecology as they provide public facilities that can be used to host farmers' markets, agroecology fairs and festivals. Although agroecology does not always include certification, as has been developed for organic agriculture, (local) markets and alternative certification methods have been created for agroecological products.

Regarding the European context, in his introductory speech to the High Level Session, Aldo Longo recalled how European products were known around the world for their quality and added value. The European Union is the largest agricultural trade partner in the world, exporting and importing the greatest number of agricultural products. But, besides the trading perspective, the European Union has very strong links with numerous countries in the European and Central Asia Regions.

### Organic agriculture and agroecology

Several questions and discussions related to the interface between organic agriculture and agroecology. Eva Torremocha (International Federation of Organic Agriculture Movements – IFOAM – Organics International, Spain/France) emphasized the dynamics, interfaces and evolution of certification for agroecology and organic agriculture. It was recalled that agroecology and organic farming are both based on principles such as ecology, fairness, care and health, but in terms of how they recognize the value of the food they produced, they rely upon very different certification processes. There is a wide-range of understandings and perceptions. Organic agriculture may be summarised as the balance between a professional and economic sector based on principles, and agroecology is positioned between applied science and a social movement. The farms worked by organic farmers are officially certified, while agroecology has a more social and collective approach, which has not yet been recognized.

The different approaches to certification can help highlight the relation between both. Organic agriculture has relied on third-party certification rules to guarantee production systems meet organic requirements, while agroecology is setting out systems based on farmer participation in audits such as Participatory Guarantee Systems. The standards were recalled (Box 4) including the evolution of Organic 3.0. As a recommendation, it was stated that more work should be carried out to strengthen mutual convergence; occasions for better harmonizing practical and political actions should be similarly developed and promoted.



#### Box 4: Standards in organic farming

During the 1970s, the initial not yet so called 'organic' associations defined norms for producing healthy food for a healthy planet. As a result, they had to establish procedures to guarantee their correct implementation, which was the start of organic certification and the organic sector. Its limits were defined by those rules and it aimed to be clearly differentiated from conventional agriculture. But, promoted by and rooted in the globalisation and privatisation waves of the 1990s and the first decade of the twenty-first century, the organic sector partly set aside some of its principles, such as justice and care, to be driven by public and private regulations and certifications and the huge global market. In some cases, it became business-as-usual and organic agriculture suffered from conventionalisation because it reproduced the same schemes (reductionism); strategies, maximum profit focussing on the economic dimension; and results, energetically dependent systems, and unfair balances in a social dimension, exactly the same as conventional and industrialised agriculture.

This is what IFOAM-Organics International names the Organic 1.0 (pioneers) and Organic 2.0 (recognition) stages.

Today, around half a century later, based on a proposal by IFOAM-OI, begins the period of **Organic 3.0** (scale up/out), this is where the paradigm of complexity is adopted, broadening the scope of the sector to the food system and embracing the diversity of stakeholders, schemes, challenges, and strategies, but always retaining as its base the principles of organic production; under this umbrella all this variety is gathered.



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## Innovative markets for agroecology

A wide variety of case studies on innovations linking sustainable agriculture with markets for sustainable products around the world were presented from various viewpoints. Allison Loconto (Food and Agriculture Organization of the United Nations – FAO/ Institut National de la Recherche Agronomique – INRA – France/Italy) explained there is a need to change how we think and speak about innovation in order to be able to identify and support those experiences that are offering new opportunities for farmers and citizens to produce and consume sustainably. Some emerging innovations use alternative metrics to valorise these products, they are building short and inclusive supply chains and rely upon open innovation. Examples were given of innovative market channels for agroecological food products, such as local farmers' markets, public procurement (e.g. school food systems), cooperatives, exchanges and more. These agroecological market channels are created through the following institutional innovations, which are ways of organizing unconventional actors in new ways and revising the rules that govern how they can collaborate:

- » Participatory guarantee systems – focus on alternative certification. The official IFOAM definition is “Participatory Guarantee Systems (PGS), which are locally focused quality assurance systems. They certify producers, based on the active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange”.
- » Multi-actor Innovation Platforms – focus on specific technologies and farmer-led experimentation.
- » Community supported agriculture (CSA) – connects consumers with food producers, both in production as well as the marketing of products, through community engagement. Investments, responsibilities (for soil, water, seed, etc.), risks and rewards are shared between the consumers and the producers and works to build a sense of community.
- » Across all the cases, fresh, local, seasonal and diverse food is made available to local consumers and stronger relationships have been created between food system actors.

Zsófia Perényi (Association of Conscious Consumers – ACC – Hungary) illustrated the concept of community-supported agriculture (CSA) and focused on reshaping cooperative markets. The aim of the ACC is to increase consumer awareness of the environmental, social, and ethical aspects of their consumption and help them to make ethical choices. Education is an important tool for achieving this aim: since 2011 more than 700 producers and consumers have participated in ACC's community supported training focussed on agriculture. Thanks to this, the concept of CSA became known in Hungary and there are now more than 20 CSA farms linking urban consumers to small-scale organic (peasant) farmers.

Agroecology is an important approach also for the international CSA network, the International network of Community Supported Agriculture (URGENCEI). The European Declaration of CSA places agroecology in a prominent position, agroecology is a critical value of the CSA networks throughout Europe. Cooperation between networks should be strengthened and we should learn how the concept of agroecology and CSA could best support each other.





Heike Schiebeck (Longo Mai, Austria) provided an insight into the local economy from a farmer's perspective. The case of the Longo Mai cooperatives was presented, which is a network of farm cooperatives with more than 40 years of experience in agroecology. A local economy was developed, as a priority to feed the community, products are not sold at an anonymous market, but the surplus is sold at the local market or through an exchange. The farms in the network have adopted agroecological practices and live on the basis of solidarity, collective local economy and a rights-based life instead of competition (see Box 5). This has raised the importance of territorial approaches to achieve consistent agroecological transitions.

During the discussions it was mentioned that, too often, open markets are promoted without taking into account local economies, farmers' well-being and livelihoods and prices farmers

### Box 5: Longo Mai cooperatives

Longo Mai cooperatives have more than 40 years of experience and are currently based in France, Austria, Germany, Ukraine, Costa Rica and Switzerland. The first cooperative was set up in France in 1973, as a kind of 'European pioneer village' away from industrial centres. It was called Longo Mai - which is a Provençal greeting meaning "Long may it last". Actions based on solidarity have been a constant factor throughout the history of Longo Mai.

Longo Mai is a small multicultural society, with a dozen different nationalities, living a form of constantly evolving, collective self-management. Lives are based on solidarity, collective local economy and a rights-based life instead of competition. Production is not limited to agriculture. Longo Mai has become strongly involved in producing seeds from traditional varieties of vegetables and cereals, has taken part in organizing several international conferences on seeds and also regularly organizes local seed swaps and participates in seed festivals in several countries. Longo Mai has also produced educational films on seed production called 'From Seed to Seed', which is a practical manual for professional or amateur gardeners who wish to learn how to produce their own vegetable seeds.

An example of Longo Mai can be found at the farm *Stopar* in Austria where nine people live and care for sheep, goats, pigs, bees, a vegetable garden, medicinal herbs, and 11 hectares of forest and holiday lodging. The priority is to feed the community by using agroecological methods of production, without agrochemicals and as far as possible being independent of oil and other fossil fuels. The products are not certified as organic or sold at an anonymous market. The surplus is sold at the local market, or exchanged with other individuals or local collectives. People can stay, work, take a holiday and experience the farm.

An association was set up 20 years ago, together with 50 farms in the village, which was pioneered by women farmers. The association collaborates in marketing products, labelling, packaging and selling collectively at the local market in order to obtain a better and secure income. Later, the men organized themselves to sell wood collectively.



receive for their products, without accounting for the efforts made while practicing agroecology to protect the environment. Valuing agroecology is, in this respect, beyond the aspects of economy or money. It is also important that all these successful small-scale models are disseminated and scaled up to all, especially those living in marginal areas. The broad diversity of consumers, including their expectations, should be considered and more research could focus on reaching consumers who are not already driven by concern for the environment.

Pavlos Georgiadis (Co-founder 'We Deliver Taste' and grower at Calypso Greece) presented the viewpoint of a private entrepreneur and described rural entrepreneurship with organic products. He noted that the world is experiencing a new public awareness and there are excellent opportunities for developing market solutions, products and services investing in food knowledge. With the sharing economy and open technologies catalysing this transition, a whole new scenario is emerging for the food economy, closing the circle. This situation is being enriched by new business models for organic agriculture, supply chains, sustainable public procurement, transparency and market education.

An example is 'We Deliver Taste', the food consultancy company founded by Pavlos Georgiadis that develops food concepts, products and educates the market. The company designs systems and strategies for food systems' innovations, which are based on valorization, supply chain management and open innovation. A new form of ethics is forming in the market based on transparency, awareness, empowerment and participation. It was suggested that there was still a need to build several types of agroecology alliances for example:

- » an alliance between agroecology and consumers – how to valorize products to add value to support farmers' income and ecosystems;
- » an alliance between agroecology and gastronomy – supply chain management and responsible sourcing;
- » an alliance between agroecology and information and communication technology (ICT) – open innovation to bring about greater transparency and education, for instance for public food procurement supply chains;
- » an alliance between agroecology and decision-makers.

Other examples of initiatives involving the private sector in innovative markets were given by Lusine Nalbandyan (Armenian Women for Health and Healthy Environment, Armenia) (highlighted in Section 6) that are strengthened by public policy involvement in the development of organic farming. These companies are promoting nature preservation by pursuing sustainable agriculture practices, while working towards minimizing the companies' environmental impacts and carbon footprints.

## **Nutrition and food habits**

It was mentioned that, agroecology has the potential to ensure access to a diverse and nutritious diets for people at all income levels. There is growing evidence suggesting that agroecology, implying diversified farming systems, facilitates diverse diets among producers, households and consumers through increased consumption of a range of important nutritional elements that are



often lacking in diets based on staple cereal crops. The consumption of legumes, and various fruits and vegetables are beneficial to health. Polycultures and mixed crop-livestock farming systems, including fishponds, help to ensure that key nutrients are available throughout the year and provide proteins during hunger gaps.

A significant health benefit of diversified agroecological systems is the reduced exposure to pesticides and other harmful chemicals used in agriculture. The (over) consumption of meat is still being debated related to healthy food, animal and human well-being, human rights, food sovereignty and food safety.

## Government Actions

Among the actions where governments could encourage agroecology, public procurement was seen as being one of the most important opportunities. It is considered important that governments reinvest in agriculture through public procurement programmes for agroecological producers by adapting procurement protocols to the local realities of agroecological production (e.g. informal trading relations).

Governments have an important role in creating innovative market models and have a key role in building local economies and markets, as they govern food chains. The support of innovations with, for instance, the creation of food councils at local, regional and national level was mentioned as well as the need of subsidies for local markets. Related to public policy, which is further addressed in the following Section, it was suggested that governments could focus on regulating the market and thereby ensure fair prices for farmers.



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## RECOMMENDATIONS OF THE PARTICIPANTS RELATED TO AGROECOLOGY AND SUSTAINABLE FOOD SYSTEMS

23. Extend the **dialogue** between health, nutrition, ecology, trade and agriculture actors to support the development of agroecological sustainable and healthy food systems.
  24. Facilitate a shift from **linear food systems** to circular that mimic natural cycles and reduce carbon and ecological footprints of food and agriculture to ensure that circular systems are designed to replace specialised and centralised supply chains with resilient and decentralised webs of food and energy systems that are integrated with sustainable water and waste management systems.
  25. Agroecology principles should be formulated and used as the principle guideline to transform and improve the current food system, be based on participation, **alliances** and put food producers at the centre.
  26. Develop specific policies and programmes to enhance **public procurement** based on short and local supply chain principles that provide fresh, nutritious, affordable food that is produced in a sustainable manner and builds local and regional economies.
  27. Develop public and long-term financial measures, training and knowledge exchange to improve **short supply chains** that favour small-scale producers, such as direct marketing and value adding, peasant markets, micro-dairy, Community Supported Agriculture initiatives and Participatory Guarantee System, provide financial and infrastructure support to collective local food processing units and support health regulations for nearby markets that are adapted to the conditions of local markets.
  28. Implement the policy recommendations for '**Connecting smallholders to markets**' that have recently been negotiated by the Committee on World Food Security at the national level.
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## 6. PUBLIC POLICIES TO DEVELOP AGROECOLOGY AND PROMOTE TRANSITION

Discussions during the symposium were related to the current context of agricultural and food systems and the structural changes needed to practices, policies and institutions to achieve transition from industrial agrifood systems to local traditional food systems.

### Transitions paths and transformative changes needed

Jean-François Soussana (Institut national de la recherche agronomique – INRA, France) presented concepts of innovations, the role of agronomic and socio-economic research and learning processes in agroecological transition. To ensure global food and nutritional security, two paradigms are often confronted.

First, sustainable intensification can be presented as ‘producing more with less’ or eco-efficiency, which is the maximization of agricultural products per unit of inputs or natural resources. Sustainable intensification is usually obtained in highly specialized production systems through a gradual substitution of inputs by knowledge (e.g. precision farming).

Agroecology is seen as an alternative paradigm, which is based on increased use of biodiversity, of integrated production systems and of diversified landscapes. It is also close to the ‘Save and Grow’ paradigm (FAO, 2011) which addresses the crop production dimension of sustainable food management through an ecosystem approach that draws on nature’s contributions to crop growth, such as soil organic matter, water flow regulation, pollination and bio-control of insect pests and diseases.

Agroecology is grounded in production systems fitted within local conditions, scaling up those systems is intrinsically difficult. To achieve the transition to agroecology in Europe, there are multiple options that may vary considerably between agro-ecological zones and according to the social, economic and human dimensions of farming systems. Such options include the:

- » intensification of extensive systems by raising production outputs through an increased use of biodiversity, landscape management (including agroforestry) and recoupling of nutrients and carbon cycles;
- » transition to organic production systems;
- » transformation of intensive systems by encouraging farmers to reduce fertilizer and pesticide use, especially through the diversification of cropping systems and through crop-livestock integration.

For policy and practical purposes, a distinction was made in the presentation of Michel Pimbert (Coventry University, the United Kingdom of Great Britain and Northern Ireland of Great Britain and Northern Ireland) between:

- » agroecological solutions based on incremental changes still under the “business as usual” paradigm of the dominant agrifood model;



- » versus more transformative changes in food and agricultural systems with an emphasis on social expectations and placing farmers at the centre of the food system.

It was recalled that today just six companies are controlling 70 percent of the global commercial market for seeds and four companies are controlling 72 percent of the pesticide market. The participants recognized, and it had already been emphasized by the speakers during the High Level Panel, including the Director-General, FAO, and the Minister of Agriculture, Hungary, that “business as usual” is not an option, and it is necessary to innovate and transform agriculture. There is a need to be more productive, using fewer resources so as to generate less impact on the environment.

As stated by the Director-General, FAO, in the opening session: *“We have to go beyond sustainable intensification. It is important to increase the efficiency of farming, but reducing the environmental ‘footprint’ of agriculture is not enough. In many parts of the world, the demand for agricultural products is still growing rapidly. New areas are still being cleared for agriculture at record rates, even with successful intensification. Current techniques are reducing environmental damage only at the margins. To tackle this situation, we need better coordination of farm and non-farm natural resource management, as well as an integrated approach that agroecology can offer.”*

The challenge is to address the lock-ins in the transition process, especially in Europe, where farming is highly dependent on inputs, the role of input providers is strong and the food chain sector in the Agricultural Knowledge and Innovation System is ingrained.

Hans Herren (International Panel of Experts on Sustainable Food Systems – IPES and Millennium Institute, Switzerland) gave an analysis of the way food systems could shift to diversified agroecological systems based on the latest IPES-FOOD report: From uniformity to diversity. First, the importance of having a universal framework such as the SDGs was recalled, and the importance of moving forward on its objectives. Goal 2 of the SDGs (Zero Hunger) is central, as it is connected to every other goal. Zero Hunger is considered as the strongest leverage point in dealing with health, education, climate, water, biodiversity, inequity, gender equality, decent work, sustainable communities, life on land and below water. Hans Herren noted that a change is already occurring, many initiatives have been developed and it is important to move beyond niche thinking. He highlighted the eight lock-ins that have been observed by IPES that are preventing changes: 1) the path dependency, 2) the concentration of power, 3) the expectation of cheap food, 4) the export orientation, 5) the compartmentalization, 6) short term thinking, 7) the feed the world narratives and 8) the measures of success.

These were further illustrated using examples raised during the Symposium under the following four sections:

### **1. The dependency on the path and concentration of power**

Moving from one system to another is not an easy and natural task. As has been conceptualized in many publications, systems in place have their stability: the specific research, skills, training, equipment, networks and retail relationships that are in place are self-reinforcing with the investments required and actors involved.





The lock-ins ‘path dependency’ and ‘concentration of power’ were highlighted in the introductory presentation by Michel Pimbert (Coventry University, the United Kingdom of Great Britain and Northern Ireland of Great Britain and Northern Ireland) and in most presentations and interventions by Civil Society Organizations (CSOs), it was mentioned that six companies control 70 percent of the global commercial market for seed; and four companies control 72 percent of the market for pesticides. Michel Pimbert stressed the consequences related to control and regulation that this entails.

## **2. The expectation of cheap food and export orientation**

The expectation of cheap food and export orientation was mentioned several times. This includes the cost–price squeeze for farmers, as well as consumer’s dependency on supermarkets and paradoxical requests that farmers are facing (high quality products for low prices). Ramona Duminiciou (European Coordination Via Campesina – ECVC, Romania) noted that farmers need prices to cover the production costs, putting an end to overproduction and exports of under-priced food. This came with a request to end export subsidies and, more broadly, to put an end to the subsidies that encourage land concentration and grabbing.

## **3. Compartmentalized and short-term thinking and the feed the world narrative**

Related to the feed the world narrative, Hans Herren (International Panel of Experts on Sustainable Food Systems – IPES and Millennium Institute, Switzerland) explained the importance of Governments creating a strategy to feed their own people first. In addition, Xavier Poux (AScA/ Institut de recherche sur les politiques, l’Institut du développement durable et des relations internationales – IDDRI, France) discussed transition scenarios in Europe, where there is a trend towards agroecology and the feed the world narrative. Transition towards agroecology involves thinking that is future oriented, that encompasses both a plausible and desirable image of what food systems could be, based on agroecology and possible pathway(s) from the situation today that is paradoxically locked-in and unsustainable. This shows what can happen if agroecology is up-scaled, it gives us a glimpse into the future and could be an important step in the policy agenda. Based on this perspective, the Ten Years for Agroecology project (TYFA) was developed by IDDRI, which is a think tank involving sustainable development policies, several European NGOs and researchers. TYFA takes into account the methodological and political challenges that arise when specifically addressing the issues at stake at the European level (EU 27).

One message was that agroecology is not a selfish option in Europe. Xavier Poux argued that Europe should not be prisoner to the concept of the feed the world narrative. The reasoning is that Europe is fed by the world as EU 28 trades 0.24 percent of the cereals produced in the world, while mainly importing from outside Europe. Another important issue is related to the change in consumption patterns and the associated changes in the food chain. Consumption patterns are shifting towards less meat and less waste production. A change to valuing food could shift consumers’ perspective towards food and lead to higher prices of food products with increased income for farmers.



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#### 4. The measures of success

Xavier Poux raised the point of discussion that the impact of agroecological transformation in Europe is different considering that, unlike the rest of the world, in Europe agroecology would not necessary mean an increase in yield but more an increase in the global output of agricultural lands, and this distinction should be taking into account at the political level. However, beyond yield, performance assessment of a system should include environmental, economic and social dimensions. This includes for instance the impact of food production on water quality, pollination or including social benefits for farmers and health impacts. Agroecology takes into account all these dimensions. Efforts are being made on full cost accounting and externalities of food systems, such as The Economics of Ecosystems and Biodiversity (TEEB), which could feed policy-making processes. This requires future thinking beyond day-to-day thinking.

### Opportunities

Policy support is needed to develop agroecological practices and move forward in the design of agroecological systems. Several existing opportunities for transitions too agroecology were presented and highlighted in the discussions:

#### 1. Incentives to encourage farmers to transition

For conventional farmers and policy-makers who question the economic performances of agroecological systems, it is important to prove that agroecology can be profitable and moreover that agroecology goes beyond short-term performance and benefits the society, for instance by improving health.



As Karlheinz Knickel (Universidade de Évora / Instituto de Ciências Agrárias e Ambientais Mediterrânicas – ICAAM, Germany - Portugal) reported that farmers orientate themselves and make decisions that, in any case, tend to go beyond common micro-economic parameters. In this regard, reorientation is taking place in the European Commission's Horizon 2020 Programme as part of the ongoing work of the EIP-Agri Focus Group on 'Benchmarking of Farm Productivity and Sustainability Performance'. In relation to this, increased data is required on externalities including figures related to the monetary values of biodiversity. It may be important to reverse the thinking on subsidies supporting conventional farming, despite the high cost to society.

Data collected during the recent IPES Food Report (2016), presented by Hans Herren (International Panel of Experts on Sustainable Food Systems – IPES, and Millennium Institute, Switzerland) has shown how diversified agricultural systems can compete with industrial systems in terms of productivity, and how biodiversity and the resilience of the production system are enhanced. For instance, comparisons increasingly favour diversified systems when total outputs are compared to monocultures. For instance, studies of grasslands have shown that on average multispecies assemblages produced 15 percent higher outputs than monocultures (Prieto et al., 2015). Mixtures have also been shown to produce 1.7 times more harvested biomass on average than single species monocultures and to be 79 percent more productive than the average monoculture (Cardinale et al., 2008). It has also been noted that less land is required to produce polycultures than to produce the same amount in monocultures, yield per area is higher for polycultures (Prieto et al., 2015; Picasso et al. 2008; Cardinale et al. 2008; Francis, 1986).

As unemployment is a serious issue in Europe and Central Asia, there is a strategic need for data on job creation. It was mentioned that the environmental and social benefits of agroecology are obvious, but in order to convince policy-makers of the importance of investing in agroecology, there is an urgent need for data on socio-economic and economic performances or aspects.

Michel Pimbert (Coventry University, the United Kingdom of Great Britain and Northern Ireland) stated that evidence has shown that more jobs are created by agroecology, which includes on-farm jobs, activities associated with community food processes and activities in short food chains linking producers and consumers. The presentation highlighted that organic vineyards create more income and employment (3.5 against 1.8 jobs in pesticide intensive vineyards of the same size) and are safer for farmworkers as synthetic pesticides are no longer used.

There is an urgent need to think about the means and incentives for conventional farmers to move all the way to transformative change, instead of the incentives just to stop at an incremental change. These incentives are fundamental during the transition period when farmers have to deal with uncertainty and transaction costs, and need to readapt an ecologic and socio-economic system.

## **2. Governance and involvement of stakeholders**

Jessica Duncan (Wageningen University, Canada) highlighted the importance of reflexive governance for environmentally sustainable food security policies. Governance is critical for empowering transition. So far, governance processes have often been limited to social-ecological issues and have failed to secure safe and sustainable food for all. A search for different policy models needs different practices of governance. To support agroecological systems there is a



need for more reflexive governance that acknowledges multiple perspectives, expectations, power dynamics and strategies. Reflexive governance can provide a more holistic and complex way of understanding the implications of policies and norms. Governance includes formal and informal arrangements and the collection of actors. Reflexivity and governance arrangements, and recognizing the political nature of our work, can open up new spaces for new voices.

Even if we speak of evidence, there is no full objectivity within agroecology as for any other subject. One tendency is to create policies and make political decisions by placing them in the hands of scientific experts, but there is no objectivity in science either.

The adaptability of policies is critical: policies are needed that can adapt to long-term thinking, and recognize there is no single vision or single truth. This alternative form of governance is practiced and adapted by the Committee of Food Security. The United Nations Committee on World Food Security (CFS) presents an example of an international policy forum where reflexive governance practices have been implemented. A review of the mechanisms, processes, practices, and outcomes of the CFS sheds light on the potential of reflexive governance processes for advancing sustainable food security policies and in turn pathways for reconciling food security and environmental sustainability.

Agroecology needs a change in paradigms and in systems supported by transformative policies and processes. Beyond the public support, the involvement of different stakeholders and their cooperation is a key to success and must be a permanent objective. Transition towards agroecology needs all stakeholders to be involved and requires thinking that is oriented towards the future.

Lusine Nalbandyan (Armenian Women for Health and Healthy Environment, Armenia) illustrated stakeholder involvement with initiatives from different stakeholders in Armenia:

- » The 'Green Field Company', called ORWACO, illustrates an example of private sector involvement. It is an Armenian – Norwegian joint venture, dealing with the conversion of industrial organic waste into useful and environmentally-friendly products such as organic fertilizers, vermicomposting, biohumus and soil additives. This allows for closing the environmental loop with the waste products from one product becoming the raw materials for the other.
- » An initiative called NAIRIAN addresses rapidly growing demand in high quality natural/organic beauty products and authentic essential oils by using Armenia's unique natural resources. 'NAIRIAN' is rapidly becoming the keystone brand for premium natural cosmetics in Armenia. Most product ingredients come from plant materials that have been cultivated or wild-harvested locally in the Armenian highlands.
- » For more than ten years, the NGO 'Armenian Women for Health and Healthy Environment' (AWHHE) has actively promoted non chemical agriculture in different regions of Armenia with extensive awareness-raising campaigns and practical demonstrations in the fields covering 'Alternatives to Pesticides' and organic fertilization. More than 5 000 farmers have been trained and more than 100 experimental fields and orchards established where agroecological farming methods and approaches are currently being practised.

During the discussion it was recognized that agroecology is a long-term and complex process and includes the viewpoints of different stakeholders at different levels or scales (local, regional and global level; field, cropping system, landscape scale). The challenge is how can all difficulties



be met at all scales and how can all stakeholders be included at all levels. A participatory approach is needed to include everyone, particular focussing on vulnerable groups. In addition, agroecology was presented as a process and should not be in opposition to different systems. Instead, however, it should be open to all stakeholders to progress towards agroecology.

### 3. The international agenda

In relation to incentives for diversification and agroecology, the importance of changes in international agenda was highlighted. As discussed, agroecology, if implemented in an ambitious and transformative way, contributes to many SDGs on the level of society, global economy and biosphere. The SDGs and the climate change agenda are seen as drivers of transformation.

Caterina Batello (Food and Agriculture Organization of the United Nations – FAO) presented the ongoing process of the FAO regional symposia on agroecology and related field activities, such as Farmer Field Schools. Following the request of members, the recommendations of the 2015 regional seminars were submitted to the FAO governing bodies. They provided guidance for FAO to continue its work on agroecological transitions at the regional level and strengthen the normative, scientific and evidence-based work on agroecology. Following the recommendations arising from the Regional Symposia and within the framework of its Strategic Programme, FAO is currently implementing field projects and training activities that link agroecological practices and resilience to climate change in sub-Saharan Africa or creating soil health curricula for farmer field schools in Southeast Asia.

Ramona Duminiciu (European Coordination Via Campesina – ECVC, Romania) added that as a farmer, the multi-stakeholder process where farmers felt they were heard and respected, should be scaled up to the national level. FAO and governments together could develop this type of process.

### 4. Public policies

Examples of policies were presented that have already been harnessed and support the transformation towards agroecology at the European and national levels.

At the European Level: the current CAP framework was recalled in the introductory speech of Aldo Longo, Director for General Aspects of Rural Development and Research, DG Agriculture and Rural Development, European Commission. The CAP focuses on three goals: valuable production of food, valuable production of natural resources, and balanced territorial development. Mr Longo mentioned that many concepts are put forward by agroecology that fit within these goals.

The CAP is implemented by Member States and allows them to support sustainable agricultural systems. The CAP presents new opportunities for farmers to build and improve their business models. Some necessary improvements in the current organization of the CAP were discussed and highlighted during the policy session at the Symposium. The CAP today places to the forefront the common comprehension of private and public good, which are at the heart of agriculture. Farmers are rewarded for the services provide society, such as landscape development, fostering biodiversity and climate action. In the 2013 CAP reforms farmers have an active role in sustainable farm management and the direct payments to farmers are conditional. Some preconditions need to be met before farmers can receive subsidies under the CAP. These are



### Box 6: Cross-Compliance and Green Direct Payments

**Cross Compliance:** in order to receive direct payments and some other forms of support, farmers are required to respect standards. These standards concern food safety, animal and plant health, the climate, the environment, the protection of water resources, animal welfare and the condition in which farmland is maintained which are called “good agricultural and environmental conditions”. In practice, this means that farmers do not have access to CAP support unless they follow the conditionality measures (cross-compliance).

**Green Direct Payments:** Member States must allocate 30 percent of their direct payment budget to Green Direct Payments. The farmers who receive the payments must respect three ‘greening’ obligations: 1) maintenance of ecological diversification areas (or ecological focus area), 2) crop diversification and 3) to maintain permanent grassland.

related to ‘Cross Compliance’ and ‘Green Direct Payments’ (Box 6). Three ‘greening’ obligations need to be met by farmers before they can receive direct payments: 1) crop diversification, 2) protection of permanent grassland and 3) the maintenance of Ecological Focus Areas (EFAs). Organic farms have been exempted from these ‘greening’ obligations.

Based on these mandatory elements, the CAP continues to play an essential role in achieving the European Union’s objectives for the environment and climate. Legislation requests Member States to allocate at least 30 percent of programme resources to voluntary measures that will benefit the environment and address climate change. Member States have gone beyond the legal obligation of spending 3 percent, as more than half of the rural development budget is devoted to measures that address the environment and climate. A variety of these measures have been adapted to local means. In addition to the CAP, as has been noted, Horizon 2020, the largest EU research and innovation programme, is also calling for agroecological approaches.

Related to the CAP and its implementation by European countries, despite the various reforms over the last decades and the greening measures implemented in the 2013 reform, which support sustainable practices, there are still many expectations concerning the provision of increased support to agroecological approaches. Some improvements were requested regarding the ‘greening’ obligation of crop diversification, the ban of pesticides on ecological focus areas, the priority given to collective approaches and rural development, the need for food chains and territorial approaches. These improvements can be linked to the discussions raised on the influence of public policies, as they may be partly counterproductive to agroecology and will need rethinking and restructuring.

Representatives of civil society organizations mentioned that, currently, European CAP subsidy payments are not directed to smaller farms and agroecology. The CAP needs to be relinked to healthy food production with targeted programmes that support agroecological production. Much more work needs to be done to promote short supply chains and localized markets.





At the national level, Pierre Schwartz (French Government, France) presented the experience of the French Agroecology Project and illustrated the different main points to implementing an agroecology policy. The Agroecology Project of France was launched in 2012 by the Minister of Agriculture and aims to encourage the majority of French farmers to adopt agroecological practices by 2025. An important step was the inclusion of agroecology in a law, in 2014: The law on the future of agriculture, food and forestry. It required strong political will and stability to launch and develop this project because time is needed for a transformative process.

The public policies concerning agroecology, as described in the Law, aim to promote and ensure the long-term viability of agroecological systems that combine economic, environmental and social high performance. In addition, the policies promote farm self-sufficiency, with improvements in their competitiveness (increased profitability and value-added plus reduced use of inputs), based on positive biological interactions, and the use of ecosystem services, the public policies contribute to the reduction of and adaptation to the impact of climate change.

Together with the transformative feature of agroecology, an important aspect of this action plan is not only about producing in a different way, but also about teaching and conducting research differently. For instance by providing training programmes on agroecology for teachers and trainers and developing e-learning courses for civil servants. With the same view, there was also a screening of other policies that took place during the Project, policies were modified as required to avoid their being counter productive. The idea was to shift farmers' support towards creating new incentives for agroecology. The agroecology project is a threefold public policy:

- » To create an ambitious policy for agriculture that is explicit and encourages farmers to produce more in a sustainable way.
- » To organize collective governance, through a Steering Committee with the main stakeholders in the sector.
- » To define and implement a collective and comprehensive Action Plan that includes the ideas from the partners involved. The Action Plan is broad, containing 16 Chapters that cover 70 actions. For each action a pilot, a timetable, milestones and monitoring indicators have been defined.

The governance and collective dynamics of the Agroecology Project are important (see Box 7). A Steering Committee formed by the main partners, such as farmer representatives and from the food industry, Ministry of Environment, representatives from environmental NGOs, farmers' organizations, agricultural institutes and research centres. Several actions, have been implemented to mobilise all the actors at the national and regional level. Several examples are presented in Box 7.

Lusine Nalbandyan (Armenian Women for Health and Healthy Environment, Armenia) illustrated an example from Armenia in Central Asia. An organic law has been in force since 2009, based on the Codex Alimentarius organic guidelines and European Union organic regulations. The country has high potential for organic agricultural production, which is believed will contribute significantly to the future sustainable improvement of rural livelihoods. Development of organic agriculture is a priority defined in the Sustainable Agriculture Development Strategy of the Ministry of Agriculture of the Republic of Armenia and is considered an excellent business opportunity for farmers and investors involved in agriculture and food production. Examples of agroecological approaches in Armenia are involving different actors, including the private sector and NGOs.



### Box 7: Examples of the Action Plan implemented during the Agroecology Project in France

A specific Action Plan was developed and contains more than 70 actions:

- » Training for farmers: training programmes and educational frameworks are being adapted to include agroecology-related knowledge more effectively.
- » Mobilisation of research and research and development: use the EIP to strengthen innovation and the diffusion of agroecological knowledge and practices.
- » Creation of an agroecological assessment tool: free use and anonymous. It allows farmers to measure their practices and performances and to compare them with those of other farmers. ([www.diagagroeco.org](http://www.diagagroeco.org))
- » Renewal of public support: investment subsidies are geared towards agroecological oriented projects, support has been increased for setting up young farmers in agroecological projects, together with support for the production of protein crops, etc.
- » Creation of economic and environmental interest groups: new legal tools, allowing grouping of farmers and implementation of a collective project to change practices on the farms, the GIEE. A total of 300 groups have already been selected and more than 400 groups are expected by the end of the year, representing more than 5 000 farmers.
- » Training of farmers, mobilizing research, **using EIP**, is very important, because of their operational group, multistakeholders who are working together to solve a problem. In France **90 operational groups have been selected**, 70 percent are involved with agroecology.
- » Implementation of regular monitoring and evaluation: the results and impact of the Action Plan are included in an annual report and indicators are used to monitor the progress achieved.
- » Voluntary groups of farmers organized around a shared project for improving or consolidating their farming methods in order to improve their economic, environmental and social performance.



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## 5. Crafting integrated food policies

Samuel Feret (ARC2020, France) illustrated how the European CAP can accompany an agroecological transition through the adaptation of subsidies, by fostering innovation by taking advantage of Horizon2020 and EIP Agri, and by fostering and increasing communities' and regional resilience. Samuel Feret, as other speakers also highlighted the importance of promoting, health-centred food systems. Improving the health of EU citizens must be considered a priority when developing policies, programmes and in funding of the European Union and national governments.

The level of food quality standards, impacts of food on human health, food waste, access to food and more, are aspects that refer to food security, but that are not considered central to the CAP. It was advised that the European Union should move towards a Common Food Systems policy framework (cf. JRC Foresight on Food, IPES Food) where the driving principles of the CAP must foster the relationship between food and ecologically sound agriculture and public health.

Ramona Duminiciou (European Coordination Via Campesina – ECVC, Romania) recalled the importance of using CAP funds to maintain the numerous and diverse level of farmers instead of following the tendency of encouraging land concentration. She gave the example of Romania where there are no less than 4.5 million food producers, and policies must be developed to acknowledge the capacity of (smallholder) food producers and put farmers at the base of a supply chain and rural economy. Policies that tend to marginalise farmers should be replaced by policies that put them at the centre of the action. Farmers should participate in the process of shaping public policies for agriculture and food.

Ramona Duminiciou closed with an important call for governments to participate actively in acting for peace and to be involved in the dialogue. There is no agroecology and food security without peace, and governments are central to achieving this goal.




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## RECOMMENDATIONS OF THE PARTICIPANTS RELATED TO PUBLIC POLICIES TO DEVELOP AGROECOLOGY AND PROMOTE TRANSITION

29. Develop **scientific and citizen-led data** supporting the potential of agroecology to create jobs and the need to analyse and systematise the experiences so to measure (quantify and qualify) the social, ecologic and economic implications of agroecology both at the farm scale and for upstream and downstream jobs.

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30. Improve and develop a **policy and economic framework** within agricultural policies that supports and allows farmers to implement agroecological practices and **make the transition to agroecological farming systems in the Common Agricultural Policy (CAP)** and in other food and agricultural related policies and programmes throughout the Region. Direct payments should be made depended upon protecting and enhancing biodiversity.

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31. Promote the establishment of **Food Policy Councils** at local, regional and national level to foster and allow consumers and participation of food producers in decision-making processes concerning the food system, markets and trade.

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32. Improve knowledge and evidence base for the needed policy, incentives, market regulatory mechanisms, tariffs to create the needed **enabling environment** to allow the transition to agroecology.

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33. FAO should include agroecology in its work, in collaboration with the International Labour Organisation (ILO) to ensure **decent rural employment** opportunities that ensure a living wage, security in the workplace, access to social protection and respect for fundamental human rights.

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34. Develop and collaborate with international mechanisms recognizing collective peasant rights, such as the Declaration on the **Rights of Peasants** and other People Working in Rural Areas, currently negotiated in the United Nations Human Rights Council.

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35. Enhance the role of **agroecology in sensitive regions**, specifically in **Central Asia**, to sustainable management of natural resources in the context of climate change to create awareness among different stakeholders (policy makers, researchers, private sector, farmers, Civil Society Organizations, and individuals).

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36. Promote research in order to better identify, quantify and qualify those **policies that act as a disincentive to agroecology**. Ensuring that **True Cost Accounting** work informs all relevant decisions that impact agriculture and food systems directly or indirectly.

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37. Encourage the region to **identify flagship countries** piloting agroecology and allowing for the multi stakeholder development of knowledge and the adoption of agroecology principles.

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## 7. CLOSING SESSION

### Summaries of the Speeches

Cristina Amaral

FAO Deputy Regional Representative for Europe and Central Asia

Cristina Amaral, on behalf of FAO, thanked the Government of Hungary, in particular H.E. Sándor Fazekas – Minister of Agriculture, for hosting the Symposium and the Government of France for their support.

Cristina Amaral recalled how agroecology is based on the three pillars of sustainable development, how agroecology is in line with the FAO common vision for sustainable agricultural and food systems and how agroecology contributes to the achievement of the SDGs. As mentioned by the Director General of FAO José Graziano da Silva, agroecology can offer innovative solutions to shift towards more sustainable systems to produce more with less environmental, economic and social costs.

Europe to Central Asia is a complex region that faces many challenges related to food security, natural resources and the impact of climate change. This Symposium was a great opportunity to bring together the various stakeholders and to set a common agenda. Over the past three days, practices, science, policies were discussed, as well as the transition towards agroecology, and the importance of small producers in this process. Cristina Amaral mentioned that this Symposium worked to catalyse future collaboration among different stakeholders and countries. It will contribute to their being able to face the challenge of ending hunger and malnutrition, while providing opportunities for social inclusion, for reverting environmental degradation and for sustainable and equitable economic growth and adaptation to climate change.

A few points were highlighted that from FAO's perspective are important and should be taken into account:

- » the promotion of public policies and incentives to create an enabling environment for farmers, pastoralists, fishers, for all those small producers that are important in this region to support the transition to agroecology;
- » the development of research innovation, the sharing of knowledge and education in agroecology;
- » the importance of ensuring the increasing inclusion of civil society, farmers' organizations, farmers' cooperatives in the transition process;
- » the promotion of new agricultural and food systems in Members Countries to contribute to the achievement of sustainable development goals on the ground;
- » the provision of help to small producers to gain access to markets and highlight the role that public policies and appropriate public procurement processes can have in the adoption of agroecological principles.



Agroecology is not an end in itself and must be addressed as an innovative solution to achieving sustainable development goals. The main characteristic of agroecology is its diversity, which must be highlighted and preserved, as there is no one size fits all solution.

The FAO Regional Office for Europe and Central Asia will work on concrete projects at the field level. During the recommendations process several flagship countries were identified to adopt the approach, for example Turkey and France, work in these countries will be supported. The Regional Office hopes that the list will become longer and is willing to collaborate in the further strengthening of the scientific base of agroecology, to compile data, develop formal and informal education, including the creation of appropriate consumer behaviours.

The Director-General, FAO, stated that the FAO would raise awareness at the global level about the beneficiaries of agroecology. At the next meeting of the COP23, which will take place in Bonn in November 2017, FAO will advocate for the inclusion and adoption of agroecology as part of the discussions. FAO will also commit to contributing to the follow-up of the meeting and to informing Member Countries and partners of these important outcomes.

Cristina Amaral finished by quoting a statement from the declaration of the SDGs: *“we can be the first generation that ends global poverty and hunger and the last generation to prevent the worst impacts of global warming before it’s too late”*.

Lilla Egri

Deputy-head of Department, Department of EU and FAO Affairs,  
Ministry of Agriculture, Hungary

Lilla Egri, as a representative of the Government of Hungary, appreciated the enthusiasm during the symposium to exchange knowledge and best practices and put agroecology at the core of sustainable agriculture. Lilla Egri noted that farmers and small-scale food producers were placed at the centre of agroecology. It is important that stakeholders can teach each other about best practices and support knowledge of agroecology by building joint research and development programmes.

Lilla Egri discussed that research on new technologies cannot offer solutions to all problems. As farmers are familiar with their local circumstances, they know the appropriate seeds and practices within their context. Therefore, farmers must be encouraged to work together to exchange seeds, knowledge and agroecological practices.







## Annex 1

# Recommendations

## Regional Symposium on Agroecology for Sustainable Agriculture and Food Systems in Europe and Central Asia

23–25 November 2016 - Budapest

### Recommendations from the participants

#### Background

Agroecology is based on principles such as biomass recycling, circular system of food production, soil health and preservation, natural inputs (sun radiation, air, water and nutrients) optimization, loss minimization, conservation of biological and genetic diversity and enforcement of biological interactions in agroecosystem components. It relies on a localised value chain, locally available natural resources and knowledge, with a strong focus on participatory action research to achieve context-specific and socially-accepted innovations within farming systems. It is multi-disciplinary, drawing on agronomy, ecology, economy and social sciences and therefore developing agroecological programmes and policies requires a multistakeholder approach bringing together agriculture, environment and social perspectives. Agroecology can make an important contribution to the transition to more sustainable food systems. Its practices, research and policies have seen exponential growth worldwide in the last decade.

Recognizing the role that agroecology can play in achieving food security and reducing malnutrition in the framework of Sustainable Food and Agriculture, FAO organized the International Symposium on Agroecology for Food Security and Nutrition in Rome in September 2014. Following this International symposium, FAO has taken the initiative of convening multi-stakeholder Symposia at the regional level<sup>1</sup>.

These regional symposia focused on disseminating the key messages from the global symposium, collecting and exchanging scientific and practical knowledge and successful cases of applying agroecology at the local and regional levels, and on identifying needs for policy, capacity development and enabling environment for the promotion and application of agroecology and provided a set of recommendations.

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<sup>1</sup> Latin America and the Caribbean Seminar, June 2015 Brasilia, Brazil and September 2016 La Paz, Bolivia; Asia and the Pacific Seminar, November 2015, Bangkok, Thailand; and Kunming China August 2016; Sub-Saharan Africa Seminar, November 2015, Dakar, Senegal



## The Regional Symposium on Agroecology for Europe and Central Asia

On 23, 24 and 25 November 2016 more than 180 participants from 41 countries representing governments, civil society, research and the private sector attended the Regional Meeting on Agroecology in Europe and Central Asia hosted by the Government of Hungary and sponsored by the Government of France. The meeting was jointly organized by the Government of Hungary and the FAO.

The Symposium was opened by H.E. Sándor Fazekas, Minister of Agriculture of Hungary, H.E. José Graziano da Silva, Director-General of the FAO, H.E. Serge Tomasi Ambassador, Permanent Representative of France to the United Nations Agencies for Food and Agriculture in Rome and Aldo Longo, Director for General Aspects of Rural Development and Research, DG Agriculture and Rural Development of the European Commission. This High Level segment insisted on the importance on shifting current systems towards more sustainable food and agricultural systems.

H.E. Sándor Fazekas, Minister of Agriculture of Hungary stated:

*“Agroecology is a prerequisite for sustainable agriculture, protection of biodiversity, sustainable natural resource management and supporting rural development. Agroecology can contribute to the achievement of Sustainable Development Goals and will lead us to solutions for the most urgent global challenges of our time. All that we are aiming for can be achieved together if we cooperate and align our actions, including member state governments, civil society actors, private sector, academia and research institutes. Countries in our region could certainly benefit from the development of agroecology.”*

H.E. José Graziano da Silva, Director-General of FAO highlighted the importance of exploring the transformative potential of agroecology:

*“Business as usual is not an option. We have to innovate and transform agriculture. We need to be more productive using fewer resources. We need to generate less environmental impact. And we have to go beyond sustainable intensification. Increasing the efficiency of farming (with precision input, improved seeds and other techniques) is certainly important. But it is not enough to reduce the environmental footprint of agriculture. In many parts of the world, the demand for agricultural products is still growing rapidly. New areas are still being cleared for agriculture at record rates, even with successful intensification. Current techniques are reducing damage only at the margins. To tackle this situation we need better coordination on farm and non-farm resource management. And we need an integrated approach that agroecology can offer. FAO is committed to explore all the potential of agroecology in this regard.”*

Speakers and participants from governments, civil society, research and the private sector have identified the following key propositions to develop Agroecology Europe and Central Asian brought up the main concepts and challenge of agroecology in Europe in Central Asia, debated within six modules:

- » Concepts and challenges of agroecology
- » Agroecological systems and practices
- » Research, innovation and knowledge sharing for agroecological transitions



- » Agroecology at the core of ecosystem services-ecological and social challenges
- » Valuing agroecology and sustainable food systems
- » Transformative policies and processes

The participants of the Symposium endorsed the following recommendations.

## RECOMMENDATIONS

### I. Public policies to develop agroecology and promote transition

1. Develop scientific and citizen led data supporting the potential of agroecology to create jobs and the need to analyse and systematise the experiences so to measure (quantify and qualify) the social, ecologic and economic implications of agroecology both at the farm scale and for upstream and downstream jobs.
2. Improve and develop a policy and economic framework within agricultural policies that supports and allows farmers to implement agroecological practices and make the transition to agroecological farming systems in the Common Agricultural Policy (CAP) and in other food and agricultural related policies and programmes throughout the Region. Direct payments should be made depended upon protecting and enhancing biodiversity.
3. Promote the establishment of Food Policy Councils at local, regional and national level to foster and allow consumers and food producers to participate in the decision-making processes concerning the food system, markets and trade.
4. Improve the knowledge and evidence base for the needed policy, incentives, market regulatory mechanisms, tariffs to create the needed enabling environment to allow for transition to agroecology.
5. FAO should include agroecology in its work carried out in collaboration with the International Labour Organisation (ILO) to ensure decent rural employment opportunities that ensure a living wage, security in the workplace, access to social protection and respect for fundamental human rights.
6. Develop and collaborate with international mechanisms recognising collective peasant rights, such as the Declaration on the Rights of Peasants and other People Working in Rural Areas, currently negotiated in the United Nations Human Rights Council.
7. Enhance the role of agroecology in sensitive regions, specifically in Central Asia, to sustainable management of natural resources in the context of climate change to create awareness among different stakeholders (policy makers, researchers, private sector, farmers, Civil Society Organizations, and individuals).
8. Promote research in order to better identify, quantify and qualify those policies that create disincentives to agroecology. Ensure that True Costing work informs all relevant decisions that impact directly or indirectly agriculture and food systems.
9. Encourage the region to identify flagship countries piloting agroecology and allowing for the multistakeholder development of knowledge and the adoption of agroecology principles.



## II. Agroecology and sustainable food systems

10. Extend the dialogue between health, nutrition, ecology, trade and agriculture actors to support the development of agroecological sustainable and healthy food systems.
11. Facilitate a shift from linear food systems to circular ones that mimic natural cycles and reduce the carbon and ecological footprints of food and agriculture, ensuring that circular systems are designed to replace specialised and centralised supply chains with resilient and decentralised networks of food and energy systems that are integrated with sustainable water and waste management systems.
12. Agroecology principles should be formulated and used as the principle guideline to transform and improve the current food system, be based on participation, alliances and put food producers at the centre.
13. Develop specific policies and programmes to enhance public procurement, based on short and local supply chain, principles that provide fresh, nutritious, affordable food that is produced in a sustainable manner and builds local and regional economies.
14. Develop public and long-term financial measures, training and knowledge exchange in improving short supply chains that favour small-scale producers, such as direct marketing and value adding, peasant markets, microdairy, Community Supported Agriculture (CSA) initiatives and Participatory Guarantee System (PGS), provide financial and infrastructure support to collective local food processing units and support sanitary rules for proximity markets that are adapted to the conditions of local markets.
15. Implement the policies recommended in 'Connecting smallholders to markets' recently negotiated by the Committee on World Food Security at the national level.

## III. Agroecology and natural resources in a changing climate: water, land, biodiversity and territories

16. Promote policies, practices, research and awareness creation material to achieve the transformative potential of agroecology to address the urgency of adapting, mitigating and reversing climate change.
17. Contribute to agroecological transition through territorial approaches and organize pilot farm networks that operate according to the principles and methods of agroecology and share their practices and techniques.
18. Ensure, recognize, respect and uphold small-scale food producers, family farmers and communities', in particular women's, youths' and indigenous and nomadic peoples', rights to land, water, seeds, inland and coastal waters, forests, commons, biodiversity and territory, also promote the implementation of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT) and the Voluntary Guidelines for Securing Sustainable Small-scale fisheries (VGSSF) and Farmers' Rights as stated in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).
19. Closely collaborate with the Commission on Genetic Resources and seek synergies with other relevant processes such as the Convention on Biodiversity





20. Develop national and regional plans for agroecological pathways to sustainable food systems and natural resource management that support the Sustainable Development Goals (SDGs) and the UNFCCC Paris Agreement.
21. Support the participative development of adequate criteria for assessing and valuing agroecological and sustainable food systems, and promote their widespread sharing among all actors.
22. Facilitate the development and implementation of agroecological practices also for aquaculture and fishpond systems based on agroecological principles and study options to better integrate aquaculture, pastoralism, livestock and crop systems within territories in order to recycle resources.
23. FAO should reinforce its processes and strengthen its partnerships to prioritize agroecology in the framework of its Strategic Framework, especially in the relevant delivery mechanisms and implement the recommendations from the Committee of Agriculture (COAG) and regional conferences and enhance activities that are specifically linked to Climate Change and Biodiversity.

#### **IV. Research, innovation, knowledge sharing and agroecological movements**

24. Knowledge transmission requires redesign educational programmes to integrate agroecology in the curriculum of non-formal and formal education (in primary and higher education), following the principles of the Global Action Programme (GAP) on Education for Sustainable Development (ESD).
25. Support knowledge exchange, in particular the horizontal exchange between food producers (farmer-to-farmer and Farmer Field Schools (FFS) methods), adapting advisory services and extension services to agroecology with specific attention to climate change adaptation and mitigation.
26. Recognize, value, support and document ancestral knowledge and modern innovations, traditions, pastoralists and peasants' local wisdom. Include participatory action research, the co-production of oral and written knowledge and cultural practices that address the true needs of communities, and particularly considers the needs of women, indigenous peoples, vulnerable groups and youth. Ensure that innovations and the products of research remain in the public and collective domains according to Article 9 in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).
27. Develop mechanisms and bridges among different agroecology knowledge platforms and websites including the European Innovation Partnership Network and FAO.
28. Promote and support agroecological practices that reduce external inputs – specifically seeds, fertilizers, pesticides, animal feed and fossil fuels, enhancing the capacity of soil and agroecosystem health to close cycles and maintain productivity, stability and resilience.
29. Document impacts of agroecology on farm income, productivity and livelihoods of farmers and develop better data on the evidence base on externalities such as social and environmental costs and the benefits of agroecological systems, possibly including collaboration with the True Cost Accounting work.





30. Create awareness material on the concept of innovation to include conceptual, methodological, social and institutional in addition to technical innovations.
31. Strengthen public research: allocate more funds for public research in the field of agroecology, favour interdisciplinary research by better connecting agricultural, ecological and social sciences. Facilitate changes in research organizations (incentives and rewards, ways of working and the training of scientists and professionals) and enable the participation of farmers and citizens in research including in their community and in governance of research: setting upstream research priorities, the allocation of funds, and participation in production of knowledge and in risk assessments.
32. Strengthen self-managed research: strengthen farmers and extension services networks for research and horizontal spread of agricultural innovations, strengthen the capacity of farmers and citizens to facilitate transdisciplinary innovations that bridge different knowledge systems and give farmers and citizens enough material security and paid time to engage in and participate in the entire research cycle, including the evaluation of research programmes and institutes.
33. Organic agriculture is largely rooted in agroecological approaches, both in principles and actual practices, and most organic farmers respond to an ecological mission as part of their social undertaking. We recommend that agroecology and organic farming be considered in their synergies and co-evolution.
34. Participatory research and knowledge sharing require openness in the exchange of data. Preserving the public nature of knowledge and environmental data is required for the development of agroecology.
35. Develop nutrition sensitive interventions and for example design legume inclusive diversification of food and fodder cropping systems based on agroecological principles and practices to improve soil health as an agroecological contribution to Sustainable Development Goals (SDGs), especially to number 1, 2, 15 and 17.
36. Recognize and strengthen farmer seed and livestock systems and reinforce their contributions to agroecology.
37. Promote research on the institutional processes and governance of agroecology.



## Annex 2

# Field visits

Two field visits were organized on Wednesday 23 November. Symposium participants could choose between 1) **Centre for Plant Diversity (Tápiószele)** and 2) **Centre of Farm Animal Gene Conservation (Gödöllő)**.

### 1. Centre for Plant Diversity (Tápiószele)

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Programme of the field visit:

- » Welcome with refreshments
- » Introduction about the Research Centre, presentation on its activities and programs
- » Guided visit through the centre including seed storages, laboratories and fields
- » Visit of the seed exhibition

The Centre for Plant Diversity has a nation-wide responsibility for the technical co-ordination of all plant genetic resources collections. The Institute is also responsible for the development and maintenance of field crop and vegetable genetic resources collections, in addition to co-ordinating plant genetic resources activities in Hungary including participatory breeding programs.

### 2. Centre for Farm Animal Gene Conservation (Gödöllő)

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Programme of the field visit:

- » Guided visit to all research centres
- » Presentation of the research centre
- » Film about the gene rescue program in the Carpathian Basin
- » Presentation of the Szomor organic farm (film and discussion)
- » “Szomor” organic farm products presentation and degustation

The Institute is the national Centre for gene conservation of traditional Hungarian farm animal breeds. It plays a major role in the breeding, research, educational and rural development programmes that aim to conserve these breeds.



## Annex 3

### Side event on LIBERATION

Presented by David Kleijn, Wageningen University, the Netherlands

During the side event on 24 November the LIBERATION (Linking farmland Biodiversity to Ecosystem seRvices for effective eco-functional intensification) project was presented and its main research findings were disseminated. LIBERATION is an European Union-funded project, led by Wageningen University, that brings together FAO and other 10 research institutions from seven countries across Europe. Key findings of the project highlighted how it should be the role of policymakers to:

- » increase awareness on the importance of ecosystem services and biodiversity in and around farm across Europe, as farmers practicing conventional agriculture are often not fully aware of this;
- » offer context dependent solutions, that take into account both the specific farming system (e.g. what type of crop is cultivated) and the economic rationale that could favour increase uptake of practices;
- » increase research efforts (including funding) on alternatives to conventional agriculture, including ecological intensification, to clarify further the benefits to farmers of such approaches – while at the same time highlighting that conserving biodiversity should be a goal to pursue beyond utilitarian arguments of the economic benefits to farming systems.



## Annex 4

# Final Agenda

## Regional Symposium on Agroecology for Sustainable Agriculture and Food Systems in Europe and Central Asia

23–25 November 2016 - Budapest

**Conference Organizers:** Food and Agriculture Organization of the United Nations (FAO)

**Hosted by:** Government of Hungary

**Sponsor:** Government of France

**Venue:** Ministry of Agriculture of Hungary, Kossuth Lajos tér 11, 1055 Budapest

Updated agenda and background documents are being posted at:

<http://www.fao.org/europe/events/detail-events/en/c/429132/>

### Symposium background

Agroecology is based on principles such as biomass recycling, circular system of food production, soil health and preservation, natural inputs (sun radiation, air, water and nutrients) optimization, loss minimization, conserve biological and genetic diversity and enforcement of biological interactions in agroecosystem components. It relies on a localised value chain, locally-available natural resources and knowledge, with a strong focus on participatory action research to achieve context-specific and socially-accepted innovations within farming systems. It is multi-disciplinary, drawing on agronomy, ecology, economy and social sciences and therefore developing agroecological programmes and policies requires a multistakeholder approach bringing together agriculture, environment and social perspectives. Agroecology can make an important contribution to the transition to more sustainable food systems. Its practices, research and policies have seen exponential growth worldwide in the last decade.

FAO organized an International Symposium on agroecology for Food Security and Nutrition in September 2014. This was followed by three regional symposia on Agroecology in 2015<sup>2</sup> and an international Symposium in China in August 2016. These symposia highlighted a broad range of best practices, policies and scientific innovation. It is proposed to convene a regional symposium in Europe and Central Asia in the end of November 2016.

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<sup>2</sup> **Latin America and the Caribbean** – 24 to 26 June 2015, Brasilia, Brazil / **Sub Saharan Africa** – 5 to 6 November 2015, Dakar, Senegal / **Asia and the Pacific** – 24 to 26 November 2015, Bangkok, Thailand



These discussions have taken place in the context of FAO's Strategic Framework, in particular Strategic Programme 2: *Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner*).

## Symposium Objectives

- » Facilitate the exchange of knowledge and experiences among different stakeholders (food producer organizations, academics, private sector, European Union (EU) institutions and representatives from all European and Central Asian countries) on the potential contribution of agroecology to sustainable agriculture and food systems;
- » Showcase existing practices and models of agroecology and provide a synthesis of the key elements related to agroecology;
- » Identify and define potential entry points and areas of contribution of agroecology in public policies;
- » Catalyse international collaboration to develop ways forward for strengthening agroecological practices and programs in the region.

## Expected outcomes

- » Knowledge shared on agroecology including practices, research, policies to contribute to the global development of agroecology;
- » Recommendations for public policies and various stakeholders;
- » Commitments of partners in specific projects and actions.



DAY 1			WEDNESDAY 23 NOVEMBER		
Morning		INTERNAL CIVIL SOCIETY ORGANISATIONS MEETING			
08.30–12.00		Venue: Ministry of Agriculture of Hungary, Kossuth Lajos tér 11, 1055 Budapest / Room 101/A			
REGISTRATION AND LUNCH					
Time		Description			
11.00-13.30		REGISTRATION OF PARTICIPANTS (for participants who have not arrive yet: another registration on 24 November 8:00)			
12.00-13.30		LUNCH - Restaurant on the 5 <sup>th</sup> floor			
Afternoon		FOR ALL PARTICIPANTS - FIELD VISIT (IN 2 GROUPS)			
Time		Description Group 1		Description Group 2	
13.30-18.30		Centre for Plant Diversity (Tápiószele) <i>The Centre has a nation-wide responsibility for the technical co-ordination of all plant genetic resources collections. The Institute is also responsible for the development and maintenance of field crop and vegetable genetic resources collections, in addition to co-ordinating plant genetic resources activities in Hungary including participatory breeding programs.</i>		Centre of Farm Animal Gene Conservation (Gödöllő) <i>The Institute is the national Centre for gene conservation of traditional Hungarian farm animal breeds. It plays a major role in the breeding, research, educational and rural development programs aiming the conservation of these breeds.</i>	
19.00		DINNER BUFFET			







## DAY 2 THURSDAY 24 NOVEMBER

### REGISTRATION

Time	Description
08.00-08.45	<b>REGISTRATION OF PARTICIPANTS</b> (for participants who did not register at 23 November)

Moderator for the 2 days meeting: **Dr Tanja Busse**

### HIGH LEVEL PANEL SESSION

Time	Speakers
08.45-09.45	<b>H.E. Sándor Fazekas</b> - Minister of Agriculture, Hungary On-site visit for biodiversity <b>José Graziano da Silva</b> - Director-General, FAO <b>H.E. Serge Tomasi</b> - Ambassador, Permanent Representative of France to the UN Agencies for Food and Agriculture in Rome <b>Aldo Longo</b> - Director for General Aspects of Rural Development and Research, DG Agriculture and Rural Development, European Commission
09.45-10.15	<b>COFFEE BREAK</b>

### MODULE 1: CONCEPTS AND CHALLENGES OF AGROECOLOGY

Chaired by Eva Torremocha

**Objective: Giving a common understanding on agroecology and agricultural challenges to all participants**

- Showing the holistic approach of agroecology and presenting its key concepts
- Presenting the challenges farmers have to face in Europe and Central Asia linked with natural resources depletions, melting glaciers, losing valuable agrobiodiversity and pollinators and the impact on food security
- Addressing the challenge of European agriculture transition with high dependence on input and the strong role of input provider and Food Chain sector
- Discussing how agroecology can support in achieving some of the SDGs

Time	Description	Speakers
10.15-11.15	<b>Introduction Speeches</b>	
	Agroecology as an opportunity to address the challenges of European and Central Asian food and agriculture	<b>Michel Pimbert</b> (Coventry University, the United Kingdom of Great Britain and Northern Ireland)
	Environmental (Biodiversity, water and soils, climate change) challenges to food security in Central Asia: agroecology as an answer	<b>Ram C Sharma</b> (International Center for Agricultural Research in the Dry Areas (ICARDA), Uzbekistan)
	Farmers practising and transitioning to agroecology: motivation, imitative and expectations	<b>Jyoti Fernandez</b> (Farmer Nyeleni Europe/ European Coordination Via Campesina (ECVC), the United Kingdom of Great Britain and Northern Ireland)
	Agroecological roots and routes	<b>Stephane Bellon</b> (Institut national de la recherche agronomique (INRA)/ Agroecology Europe, France)



	FAO process on agroecology	<b>Caterina Batello</b> (Food and Agriculture Organisation of the United Nations (FAO))
11.15-12.15	<b>Discussion and Synthesis</b>	
	Discussion and Synthesis	Moderator: <b>Tanja Busse</b>
12.15-13.30	<b>12.15-12.35 : SIDE EVENT ON LIBERATION BY DAVID KLEIJN, WAGENINGEN UNIVERSITY, THE NETHERLANDS:</b> project on building the evidence base for ecological intensification across a number of European countries	
	<b>LUNCH FUNDED BY LIBERATION</b>	
<b>MODULE 2: AGROECOLOGICAL SYSTEMS AND PRACTICES</b>		
Chaired by Rodion Sulyandziga		
<b>Objective: illustrating agroecological systems and the transition processes giving the floor to food producers and researchers</b>		
<ul style="list-style-type: none"><li>• Showing the diversity of the region, of the food producers (including peasants but also fisherfolks, pastoralists, urban communities, indigenous peoples, youth, women organizations) and successful experiences</li><li>• Illustrating the biophysical, environmental, social and economic practices and principles of agroecology and context specific, system oriented</li><li>• Illustrating the sustainability of agro ecological systems regarding food provision, incomes, farmers’ wellbeing, environment and climate change, employment, rural development</li><li>• Showing initial changes already being experienced, especially in the Central Asia agroecology, due to climate change and needed interventions</li><li>• Access rights in fisheries: bringing the international guidelines on securing sustainable small scale fisheries into play</li></ul>		
Time	Description	Speakers
13.30-14.00	<b>Introduction Speeches</b>	
	Agroecological practices supporting provision of goods and services in agriculture	<b>Alexander Wezel</b> (Institut supérieur d'agriculture et d'agroalimentaire Rhône-Alpes (ISARA)/Agroecology Europe, Germany)
	Livestock and Agroecology: Forty research issues for the redesign of animal production systems in the 21st century	<b>Eliel Gonzalez Garcia</b> (Institut national de la recherche agronomique (INRA), France)
14.00-14.40	<b>Agroecology in Action</b>	
	Agroecological initiatives in Armenia	<b>Lusine Nalbandyan</b> (Armenian Women for Health and Healthy Environment, Armenia)
	Testimony from a Food Producer from Hungary	<b>Zoltán Dezsény</b> (Hungary)
	Fisheries and agroecology	<b>Natalia Laino</b> (World Forum of Fishers People (WFFP), Spain)
14.40-15.30	<b>Discussion and Synthesis</b>	
	Discussion and Synthesis	Moderator: <b>Tanja Busse</b>
15.30-16.00	<b>BREAK</b>	



### MODULE 3: RESEARCH, INNOVATION AND KNOWLEDGE SHARING FOR AGROECOLOGICAL TRANSITIONS

Chaired by Michel Pimbert

**Objective: Showing the innovative and transformative character of agroecology and its technical and socio economical aspects**

- Showing the innovations present in traditional systems with emphasis on indigenous people
- Showing the importance of social and economic innovations with emphasis on youth and women
- Providing key examples of technical innovations and the way they are spread
- Showing the diversity of learning processes and tools and their importance
- Illustrating the importance of context specific, system oriented and participatory approaches including farmers, advisers, scientists and other stakeholders in learning and co-innovation processes
- Providing successful examples of farmer led research and innovation networks
- Illustrating the sustainability of agroecological systems regarding food provision, incomes, farmers' wellbeing, environment and climate change, employment, rural development and addressing the multiple criteria to assessing performance of agriculture systems agroecology beyond productivity

Time	Description	Speakers
16.00-16.30	<b>Introduction Speeches</b>	
	Concepts of innovations, role of agronomic and socio-economic research and learning processes in agroecological transition	<b>Jean-François Soussana</b> (Institut national de la recherche agronomique (INRA), France)
	Beyond productivity: multiple criteria for assessing performance of agriculture systems	<b>Karlheinz Knickel</b> (Universidade de Évora / Instituto de Ciências Agrárias e Ambientais Mediterrânicas (ICAAM), Germany - Portugal)
16.40-17.30	<b>Agroecology in Action</b>	
	Participatory on-farm organic research network	<b>Dóra Drexler</b> (Hungarian Research Institute of Organic Agriculture, Hungary)
	Participatory breeding programme and Gene bank activities to support agroecology	<b>Attila Kristó</b> (Centre for Plant Diversity, Hungary)
	Evaluating Participatory Research for Sustainable Agriculture	<b>Anna Augustyn</b> (Groupe de Bruges, Poland)
	Building Horizontal Networks for Agroecology Learning and Training in Europe	<b>Rupert Dunn</b> (the United Kingdom of Great Britain and Northern Ireland) and <b>Colin Anderson</b> (Coventry University, the United Kingdom of Great Britain and Northern Ireland)
	Youth training and Agroecology Schools	<b>Alazne Intxauspe</b> (EHNE-Bizkaia, Spain)
17.30-18.30	<b>Discussion and Synthesis</b>	
19.30	<b>GALA DINNER HOSTED BY THE HUNGARIAN GOVERNMENT</b>	



## DAY 3 FRIDAY 25 NOVEMBER

### MODULE 4: AGROECOLOGY AT THE CORE OF ECOSYSTEM SERVICES-ECOLOGICAL AND SOCIAL CHALLENGES

Chaired by Lusine Nalbandyan

#### Objectives:

- Highlighting practices, and providing specific examples showing the centrality of ecosystem services, below and above ground biodiversity, for agricultural sustainability and climate change adaptation
- Highlighting the importance of ecosystem based design and adaptation for farmer resilience to environmental and economic shocks or new trends in relation with climate change
- Providing example of agro-ecosystem based technologies for food security especially in fragile ecosystems
- Showing agroecology's inherent respect for complex, living structures as the centre of productivity
- Recalling the key issue of access to and sustainable use of natural resources such as land, water, seeds, livestock and fisheries

Time	Description	Speakers
08.30-09.00	<b>Introduction Speeches</b>	
	Development of Agroecological systems based on biodiversity and ecosystem services	<b>Alain Peeters</b> (RHEA Research Centre/ Agroecology Europe, Belgium)
	Access to land and natural resources as a basis for Indigenous Peoples livelihood and well being	<b>Rodion Sulyandziga</b> (Centre for Support of Indigenous Peoples of the North, Russia)
09.00-09.40	<b>Agroecology in Action</b>	
	Soil health preservation, soil biodiversity and nutrients cycles	<b>Roberto Garcia Ruiz</b> (Jaen University/ Expert Group for Technical Advice on Organic Production (EGTOP), Spain)
	Using ecosystem services framework for climate change adaptation in agriculture	<b>Melike Kuş</b> (The Nature Conservation Centre, Turkey)
	Agroecology in the context of Climate Change and water scarcity in the arid conditions of the Southern Aral Sea region	<b>Bakhitbay Aybergenov</b> (Center for support of farmers and entrepreneurship, Uzbekistan)
	Renewing agricultural biodiversity: A central issue for agroecological transition	<b>Guy Kastler</b> (Réseau Semences Paysannes, France)
09.40-10.45	<b>Discussion and Synthesis</b>	
	Discussion and Synthesis	Moderator: <b>Tanja Busse</b>
10.45-11.15	<b>COFFEE BREAK</b>	

### MODULE 5: VALUING AGROECOLOGY AND SUSTAINABLE FOOD SYSTEMS

Chaired by Stephane Bellon

#### Objectives:

- Addressing the notion of sustainable food systems with reduced dependency on external markets
- Providing example of local marketing and trade of and small scale production
- Enabling forms of economic exchanges for agroecology, including solidarity economics and plural economies



- Providing examples of agroecological initiatives on local or global food systems and provision of food in urban area
- Discussing valuation frameworks (organic certification and Participatory Guarantee systems, congruence with agroecological principles)
- Discussion of reshaping the markets based on equal distribution of power, decision making and remuneration

Time	Description	Speakers
11.15-11.45	<b>Introduction Speeches</b>	
	Agroecology and organic agriculture: dynamics and interfaces and evolutions in the certification	<b>Eva Torremocha</b> (International Federation of Organic Agriculture Movements (IFOAM)-Organics International, Spain/France)
	Institutional innovations supporting local markets for sustainable agriculture	<b>Allison Loconto</b> (Food and Agriculture Organisation of the United Nations (FAO)/ Institut National de la Recherche Agronomique (INRA), France/Italy)
11.45-12.15	<b>Agroecology in Action</b>	
	Longo mai cooperatives, more than 40 years of experiences	<b>Heike Schiebeck</b> (Longo Mai, Austria)
	Rural entrepreneurship on organic products	<b>Pavlos Georgiadis</b> (Co-founder 'We Deliver Taste' and grower at Calypso Greece)
	Reshaping cooperative markets	<b>Zsófia Perényi</b> (Association of Conscious Consumers (ACC), Hungary)
12.15-13.15	<b>Discussion and Synthesis</b>	
	Discussion and Synthesis	Moderator: <b>Tanja Busse</b>
13.15-14.15	<b>LUNCH</b>	

## MODULE 6: TRANSFORMATIVE POLICIES AND PROCESSES

Chaired by Elene Shatberashvili

### Objectives:

- Discussing how to create an enabling environment for agroecology transitions
- Presenting examples of existing public policies on agroecology
- Discussion methodological and institutional innovations for inclusive citizen participation in policy making for agroecology and sustainable food systems, including ex ante economical, environmental and social assessment
- Discussion of the role of ecosystem services in public policy with the focus on enabling policy and institutions related to agro-ecosystems in Central Asia
- Discussing how agroecology can support in achieving some of the SDGs
- Highlighting the positive and negative effects of public policies on agroecological transitions and propositions action to support countries in their policies
- Discussion of the different approaches towards agroecology – scaling up or scaling out Deciding the way to move forward for public policies



Time	Description	Speakers
14.15-14.45	<b>Introduction Speeches</b>	
	Public policies and Food systems: From uniformity to diversity: a paradigm shift to diversified agroecological systems	<b>Hans Herren</b> (International Panel of Experts on Sustainable Food Systems (IPES)/ Millenium Institute, Switzerland)
	Reflexive governance for environmentally sustainable food security policies	<b>Jessica Duncan</b> (Wageningen University, Canada)
14.45-15.25	<b>Agroecology in Action</b>	
	Building the Agroecology Framework and Land rights for Peasants in Eastern Europe and Central Asia	<b>Ramona Duminiciou</b> (European Coordination Via Campesina (ECVC), Romania)
	The French Agroecology Law: elaboration and lessons learned	<b>Pierre Schwartz</b> (French Government, France)
	Transition scenarios to agroecology in Europe	<b>Xavier Poux</b> (ASCA/Institut de recherche sur les politiques, l'Institut du développement durable et des relations internationales (IDDRI), France)
	How the European Common Agricultural Policy can accompany an agroecological transition?	<b>Samuel Feret</b> (ARC2020, France)
15.25-16.30	<b>Discussion and Synthesis</b>	
	Discussion and Synthesis	Moderator: <b>Tanja Busse</b>
16.30-16.45	<b>BREAK</b>	
<b>CLOSING SESSION AND RECOMMENDATIONS</b>		
Time	Description	
16.45-17.45	<b>Recommendations</b>	
	Recommendations for Sustainable Agriculture and Food Systems in Europe and Central Asia	
17.45-18.00	<b>Closing remarks</b>	
	<b>Cristina Amaral</b> FAO Deputy Regional Representative for Europe and Central Asia	
	<b>Lilla Egri</b> Deputy-head of Department, Department of EU and FAO Affairs, Ministry of Agriculture of Hungary	





## Annex 5

### Advisory Panel

No	Name	Organization
1	Eva Torremocha	University Pablo de Olavide in Seville, IFOAM-Organics International
2	Rodion Sulyandziga	Centre for Support of Indigenous Peoples of the North - CSIPN
3	Jean-François Soussana	Environmental Division, INRA
4	Ram C. Sharam	International Center for Agricultural Research in the Dry Areas, CGIAR Program Facilitation Unit for Central Asia and the Caucasus
5	Reuben Sessa	FAO REU
6	Michel Pimbert	Center for Agroecology water and resilience, Coventry University
7	Carsten Pedersen	World Forum of Fishers People (WFFP)
8	Lusine Nalbandyan	Armenian Women for Health and Healthy Environment
9	Jyoti Fernandes	Nyeleni Europe/ECVC
10	Ágnes Dús	Hungarian Government
11	Rémi Cluset	FAO HQ Rome
12	Stéphane Bellon	Agroecology Europe



## Annex 6

# Participants List





Prefix	Name	Company	Country
Mr	Festim Shytaj	Ministry of Agriculture, Rural Development and Water Administration, Albania	Albania
Mr	Meta Bledar	Szent istván University	Albania
Mrs	Lusine Nalbandyan	AWHHE NGO	Armenia
Mrs	Elisabeth Süßenbacher	Federal Ministry of Agriculture, Forestry, Environment and Water Management, Austria	Austria
Mrs	Heike Schiebeck	Longo Mai, Via Campesina Austria	Austria
Mr	Aldo Longo	European Commission	Belgium
Mr	Eric Gall	IFOAM EU	Belgium
Mr	François Devaux	CIDSE	Belgium
Mr	Stéphane Parmentier	Oxfam-Solidarity	Belgium
Ms	Clotilde De Montpellier	Department of Geography, University of Namur	Belgium
Ms	Olcay Bingol	European Coordination Via Campesina (ECVC)	Belgium
Prof	Alain Peeters	RHEA	Belgium
Mr	Fahro Belko	Ministry of Foreign Trade and Economic Relation BiH	Bosnia & Herzegovina
Dr	Jessica Duncan	Wageningen University	Canada
Mrs	Sanja Krnić Bastać	Ministry of Agriculture, Croatia	Croatia
Ms	Elisabeth Olsen	Lancaster University	Faroe Islands
Dr	Allison Loconto	INRA/ FAO	France/Italy
Dr	Davi Savietto	INRA	France
Dr	Eve Fouilleux	CNRS / CIRAD	France
Dr	Philippe Lemanceau	INRA	France
Dr	Xavier Poux	ASCA-IDDRI	France
Mr	Despoisse Adrien	Nyitott kert alapítvány	France
Mr	Elíel González García	INRA	France
Mr	Fabien Stark	Agreenium	France
Mr	Guy Kastler	Réseau Semences Paysannes	France
Mr	Jean-François Soussana	INRA	France
Mr	Pierre Schwartz	Ministry of Agriculture, Food and Forestry, France	France
Mr	Samuel Feret	Agricultural and Rural Convention	France



Prefix	Name	Company	Country
Mr	Stéphane Bellon	INRA / AE EU	France
Ms	Kitti Kenéz	French Embassy, Economic Section	France
Dr	Gocha Tsereteli	Scientific-Research Center of Agriculture	Georgia
Mrs	Khatuna Akhalaia	ECO-LIFE	Georgia
Ms	Elene Shatberashvili	ELKANA	Georgia
Dr	Karlheinz Knickel	Universidade de Évora	Germany/Portugal
Dr	Alexander Wezel	ISARA-Lyon	Germany
Mr	Gábor Figeczky	IFOAM - Organics International	Germany
Mr	Mahesh Jampani	United Nations University (UNU-FLORES)	Germany
Mrs	Johanna Wider	Federal Office for Agriculture and Food, Germany	Germany
Ms	Tanja Busse	Moderator	Germany
Mr	Pavlos Georgiadis	We Deliver Taste	Greece
Dr	Dóra Drexler	ÖMKi	Hungary
Dr	Thieu Ngoc Lan Phuong	Research Centre for Farm Animal Gene Conservation (HÁGK)	Hungary
Dr	Zoltán Elek	MTA-ELTE-MTM, Ecology Research Group	Hungary
Miss	Lili Balogh	Agrofutura	Hungary
Miss	Lilla Egri	Ministry of Agriculture, Hungary	Hungary
Mr	Alfred Szilágyi	Hungarian Permaculture Association	Hungary
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REPORT *of the*  
REGIONAL SYMPOSIUM ON AGROECOLOGY *for*  
SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS  
*for Europe and Central Asia*

# REGIONAL SYMPOSIUM ON AGROECOLOGY FOR SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS *for Europe and Central Asia*

*The Regional Symposium on Agroecology for Sustainable Agriculture and Food Systems in Europe and Central Asia was held in Budapest from 23–25 November 2016. The Symposium was co-organized by FAO, the Government of Hungary and supported by the Government of France.*

*The symposium provided a forum for representatives of governments, academia, the private sector and civil society organizations with the aim to facilitate the exchange of knowledge and experiences, to showcase existing practices and models of agroecology, to identify and define potential entry points and areas of contribution of agroecology in public policies and to catalyze international collaboration to develop ways forward for strengthening agroecological practices and programs in the region.*

*The discussion focused on the concepts and challenges of agroecology, agroecological systems and practices, research innovation and knowledge sharing, ecological and social changeless, valuing agroecology and sustainable food systems and transformative policies and processes. The discussions resulted in a set of recommendations.*



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